United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
February 1, 2016

So nice to see the endless snow cover in the backcountry mountains of north Idaho this winter after the last few years of underwhelming conditions. A recent helicopter snow survey trip found continuous snow covered area down to below 3000 feet elevations in the Clearwater basin whereas last year the lower elevations were basically free of snow up to almost 5000 feet. Despite January precipitation being a little below normal this year, cold weather allowed nearly all precipitation to fall as snow and continue building the snowpack; not just here but throughout the state! Most of north Idaho areas show about 95% of the normal snowpack for February 1 so this is good news as we are almost two-thirds of the way to the normal seasonal snowpack peak in April.

More good news – the 95% snowpack in north Idaho is the lowest in the state! Basins across our southern border are 150% while the rest of eastern and central Idaho range between 100 and 125 percent of normal. The summer streamflow outlook is very promising at this point, read through this report for more detailed information for the local basins in your area of interest.

REMINDER: We are soliciting field work photos from our snow surveyors again this year. Each month we will pick one to grace the cover of this report! Please include information on where, when and of who/what the photo was taken.

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

For more water supply and resource management information:

Contact: Your local county Natural Resources Conservation Service Office
Internet Web Address: http://www.id.nrcs.usda.gov/snow/
Natural Resources Conservation Service Snow Surveys
9173 West Barnes Drive, Suite C
Boise, Idaho 83709-1574 (208) 378-5700 ext. 5

To join a free email subscription list contact us by email at: IDBOISE-NRCS-SNOW@one.usda.gov

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when the snow melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to produce runoff forecasts. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertainty is in the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

IDAHO WATER SUPPLY OUTLOOK REPORT

February 1, 2016

SUMMARY

So far so good – as the saying goes... Idaho's mountain snowpack ranges from 150% of normal across southern Idaho to near normal in the Bear River, Upper Snake, Central Idaho, Clearwater and Panhandle Region. The West Central Mountains and Salmon basin are about 120% of median. January precipitation ranged from pockets of 80-120% of average across the state and helped to maintain the snow levels reported a month ago. Reservoir storage levels vary from one-third of average across the southern part of the state because of the ongoing drought to near average in Dworshak Reservoir. The lowest streamflow forecast is for 75% of average for the Bear River below Stewart Dam but quickly increase to 85-100% in the Bear River headwaters and the Upper Snake. Forecasts range from 90-120% of average across most of the rest of Idaho except Idaho's southern border that are predicted at 130-180%. Irrigation supplies should be adequate across most of the state, but are still marginal at best in the Big Wood, Big Lost, and Little Lost basins. Another round of storms is needed during February to maintain these streamflow forecasts and water supply outlooks. However, as we complete this report in early February, forecasts are calling for warmer and drier weather moving into Idaho the first full week of February.

SNOWPACK

Near average or better precipitation falling across most of the state in January helped to maintain current snow levels from a month ago. This year's unique El Nino winter storm pattern has built snowpacks that are 90-105% of median in the Panhandle Region, Spokane, Clearwater, Little Wood, Big Lost, Upper Snake and Bear River basins. Even better snowpacks, which are 115-125% of median, can be found in the West Central Mountains, Salmon, Little Lost and Mud Lake basins. The highest snowpacks in the region are 140-155% of median across Idaho's southern border; this is great news for these drought ridden basins. The Bruneau basin has the highest snowpack since 2006 and is the 6th highest since 1961. With 40% of the winter still to come, the Bruneau basin is just about to exceed its normal seasonal SWE peak while the Owyhee, Salmon Falls and Oakley basins only need one or two more storms to exceed their early April seasonal peaks. The West Central Mountains, along with most of the state have already exceeded their 2015 snow water peaks. The basins currently reporting near normal snow levels still need near normal snowfall for the next two months to reach their typical seasonal peaks in early April.

PRECIPITATION

Lucky for us, the dry spell that started in late December ended before mid-January arrived. Storms started arriving again in mid-January and continued bringing moisture into the state until the last few days of the month. By the end of the month, January precipitation ranged from 80% of average in the Big Lost, Little Wood and Mud Lake basins to 125% in Oakley basin. Elsewhere precipitation amounts were about 85-100% of average from the Panhandle Region to the Boise, and across to the Upper Snake in Wyoming. The exception are the lower elevation drainages of Willow, Blackfoot and Portneuf basins in eastern Idaho that received 114% of average. Storms tracking across northern

Nevada allowed for above average precipitation to fall again across Idaho's southern border. January precipitation amounts were 107% of average in the Owyhee and Bruneau basins, 110% in Salmon Falls, 126% in Oakley and even the Bear received 114% of average precipitation amounts. Precipitation since the water year started October 1, 2015 closely mirrors the snowpack percent of averages. The lowest ones are about 95% of average in the Spokane, Upper Snake, and Bear River basins. Near normal precipitation has fallen across eastern Idaho to the Clearwater basin. The West Central Mountains along with the Panhandle Region have received 110-120% of normal since October 1. The highest water year precipitation totals are 130-155% of average in the Owyhee, Bruneau and Salmon Falls basins. This is great news for these southern Idaho basins to hopefully start the recovery from the four year drought.

RESERVOIRS

Without any major runoff events so far this winter, water storage facilities across the state are holding steady to see how much snow falls in our mountains this winter. Current storage levels vary across the state from above average to only a third of average in southern Idaho because of the ongoing drought. Northern Idaho storage facilities, including Dworshak Reservoir, are near average for the most part and waiting for that first winter runoff event. The Payette Reservoir system is 87% of average, 55% full while the Boise system is 96% of average, 51% full.

As displayed in January's Surface Water Supply Indexes (SWSI), water supplies were only slated to be marginally adequate in Idaho's central mountains. This is based on knowing the surface irrigation demand, current reservoir storage levels and projected streamflow forecasts. Current storage in Mackay Reservoir is near average at 61% full, while Little Wood Reservoir is 70% of average, 38% full, and Magic Reservoir is 48% of average, which is only 17% full. Streamflow forecasts are about the same as last month in these basins which means the potential is still present for marginally adequate irrigation supplies.

Combined Jackson Lake and Palisades Reservoir storage is near average at 60% of capacity. The Snake River near Heise streamflow forecast is the same as last month at 90% of average, and would provide adequate irrigation supplies. Near normal future precipitation is needed to maintain this forecast volume. If the April-September forecast approaches 78% of average or around 3,000 KAF; then supplies may be marginally adequate. A few more winter storms are needed or good spring precipitation to improve the water supply outlook in these basins that are only reporting a near normal snowpack.

The lowest reservoir storage levels are across southern Idaho because of the on-going drought. Lake Owyhee and Wild Horse reservoirs are about 30% of average, Salmon Falls Reservoir is 43% of average, while Oakley Reservoir is 61% of average, but these reservoirs are only 10-18% of their capacity. With streamflow forecasts in the 130-180% of average range, there will be plenty of water this year and the reservoirs should have plenty of room to store it depending on how the snow melts. Bear Lake is 81% of average, 36% full and will provide adequate irrigation supplies for its users. Montpelier Reservoir is 145% of average and nearly two-thirds of capacity. The better mid-elevation snowpack this year will help the smaller mid-elevation reservoirs like Mountain Home, Little Camas, and Long Tom reservoirs; but the key is still how the snow melts - gradually or is flushed out by a rain on snow event.

STREAMFLOW

Current streamflow forecasts are similar to last month's and call for 90-120% of average across most of Idaho. The exceptions are the Bear River below Stewart Dam which is forecast at only 75% of average, and the basins south of the Snake River which are forecast at 150%. These southern Idaho basins have the best snowpack in several years with forecasts that range from 135% of average for Oakley Reservoir Inflow to 150% or better in the Owyhee basin. This is great news for these southern Idaho basins which have not seen above average runoff volumes since 2011. So far this winter, there has not been any major low elevation runoff events or rain on snow runoff events. However this may change with the first major warm-up expected in early February. Colder temperatures have kept the low and mid-elevation snowpack in place and prevented much settling of the higher elevation snowpack. A dry month will cause the streamflow forecasts to decrease by next month, while above normal precipitation will further increase the forecasts, especially in southern Idaho. Water users should use all five streamflow exceedance forecasts accordingly to determine their level of risk.

Note: The volumes referenced in these narratives are the 50% Chance of Exceeding Forecast, unless otherwise noted. Users may wish to use a different forecast to reduce their risk of having too much or too little water.

RECREATION

With a near normal or better snowpack across the state, winter and summer recreationists should be happy. Avalanche dangers are still present; backcountry skiers and snowmobilers should use caution and check current conditions before venturing into Idaho's snow covered mountains. The highest snowpacks are across Idaho's southern border at 150% of median and guarantees the whitewater runoff season will be much better than the past few seasons. Past analysis shows that Bear Creek SNOTEL needs about 20 inches of snow water or a wet spring to have an adequate Bruneau River rafting season; just a few more storms are needed to reach this threshold. Likewise, the Owyhee snowpack at 150% of median and the streamflow forecast of 150% of average means there will be a good floating season this year. The snowpack on the Salmon River basin ranges from 110-130% of median while the Selway River is 91% of average. More snow is still needed especially with those basins reporting a near normal snowpack.

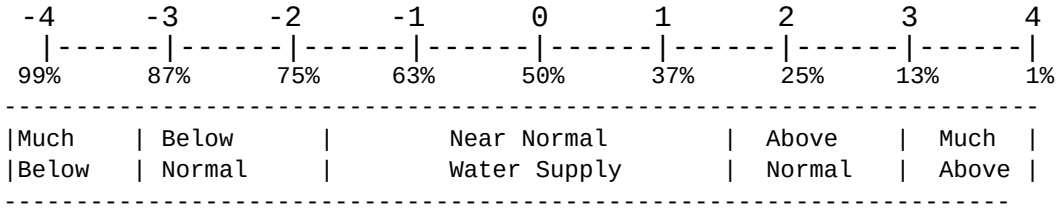
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) February 1, 2016

The Surface Water Supply Index (SWSI) is a predictive indicator of surface water availability within a watershed for the spring and summer water use season. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow. SWSI values are scaled from +4.0 (abundant supply) to -4.0 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences. The SWSI analysis period is from 1981 to present.

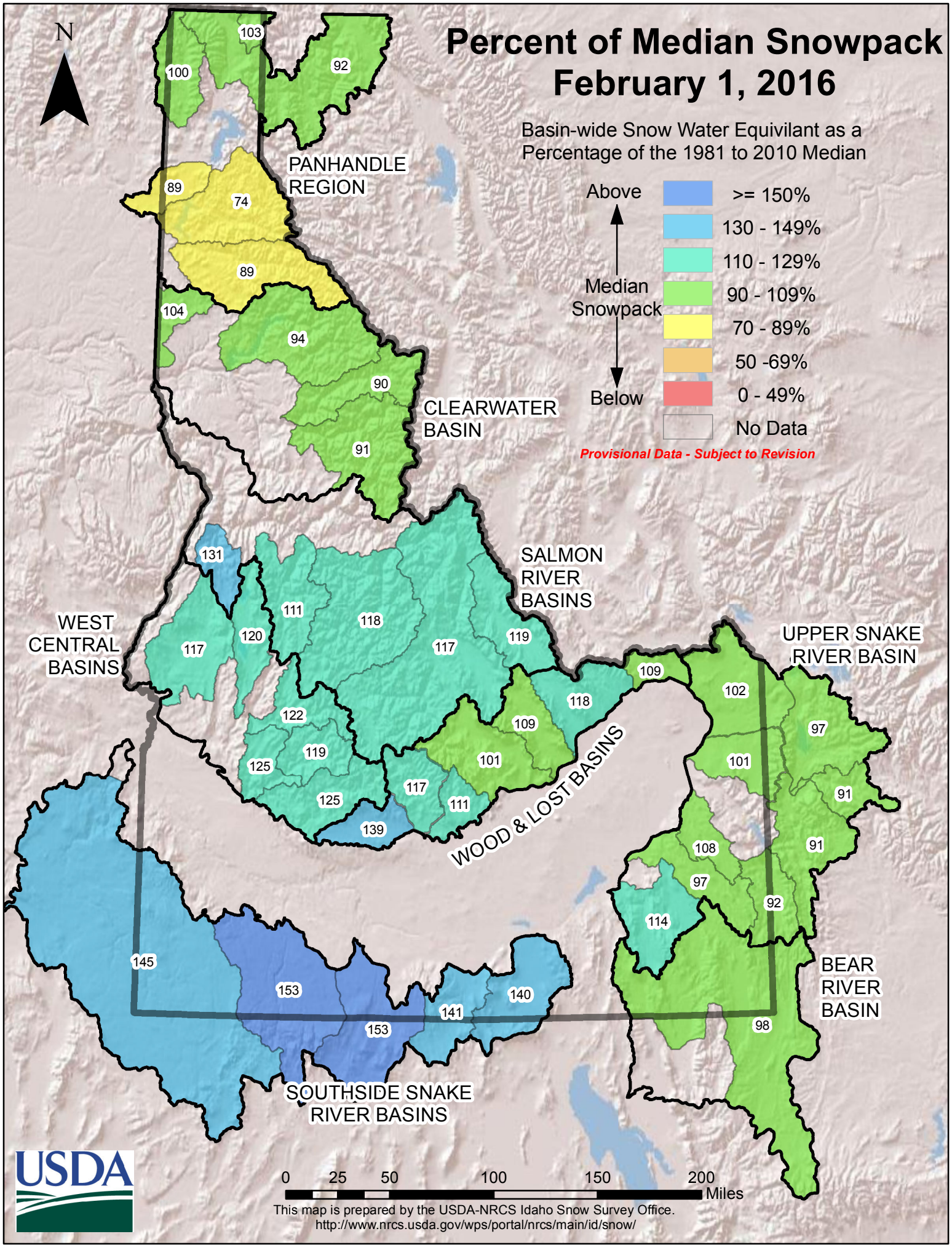
SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for some basins to indicate the potential for agricultural irrigation water shortages.

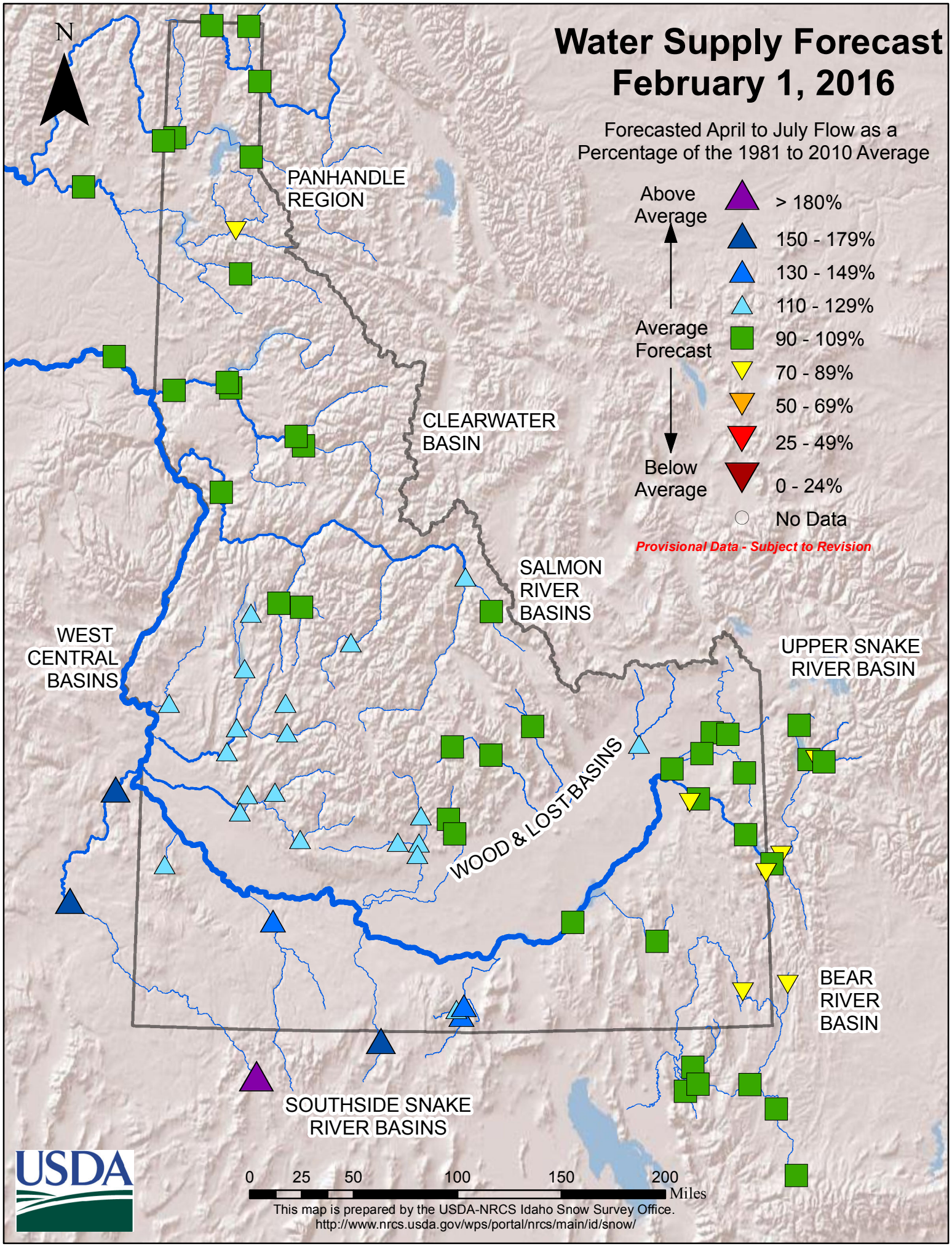
BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	**-0.6**	**2013**	**NA**
Clearwater	**0.3**	**2000**	**NA**
Salmon	**0.3**	**2010**	**NA**
Weiser	**1.5**	**2008**	**NA**
Payette	**0.8**	**2008**	**NA**
Boise	**1.3**	**1995**	**-1.4**
Big Wood	**0.8**	**2012**	**0.7**
Little Wood	**1.0**	**2012**	**-1.2**
Big Lost	**0.8**	**2010**	**0.7**
Little Lost	**0.8**	**2006**	**1.4**
Teton	**0.3**	**2010**	**-3.9**
Henrys Fork	**-0.3**	**2012**	**-3.6**
Snake (Heise)	**-0.3**	**2010**	**-1.6**
Oakley	**1.5**	**2007**	**0.5**
Salmon Falls	**1.7**	**1996**	**-0.7**
Bruneau	**2.2**	**2005**	**NA**
Owyhee	**1.3**	**1993**	**-3.0**
Bear River	**-0.8**	**2010**	**-3.7**

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



NA=Not Available / Not Applicable; Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater than -3.0, 87% of the time and less than -3.0, 13% of the time. Half the time, the SWSI will be below and half the time above a value of zero. The interval between -1.5 and +1.5 described as "Near Normal Water Supply," represents three SWSI units and would be expected to occur about one-third (36%) of the time.


Percent of Median Snowpack
February 1, 2016
Basin-wide Snow Water Equivilant as a Percentage of the 1981 to 2010 Median
Above
Median Snowpack
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
103
100
92
89
74
89
104
94
90
91
131
111
118
117
120
117
119
109
102
118
122
109
97
119
101
101
125
117
91
125
111
139
108
91
97
92
114
145
153
140
141
153
98
USDA
0 25 50 100 150 200
Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/


N
Water Supply Forecast
February 1, 2016
Forecasted April to July Flow as a
Percentage of the 1981 to 2010 Average
Above Average
Average Forecast
Below Average
> 180%
150 - 179%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 - 69%
25 - 49%
0 - 24%
No Data
Provisional Data - Subject to Revision
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
USDA
0 25 50 100 150 200
Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
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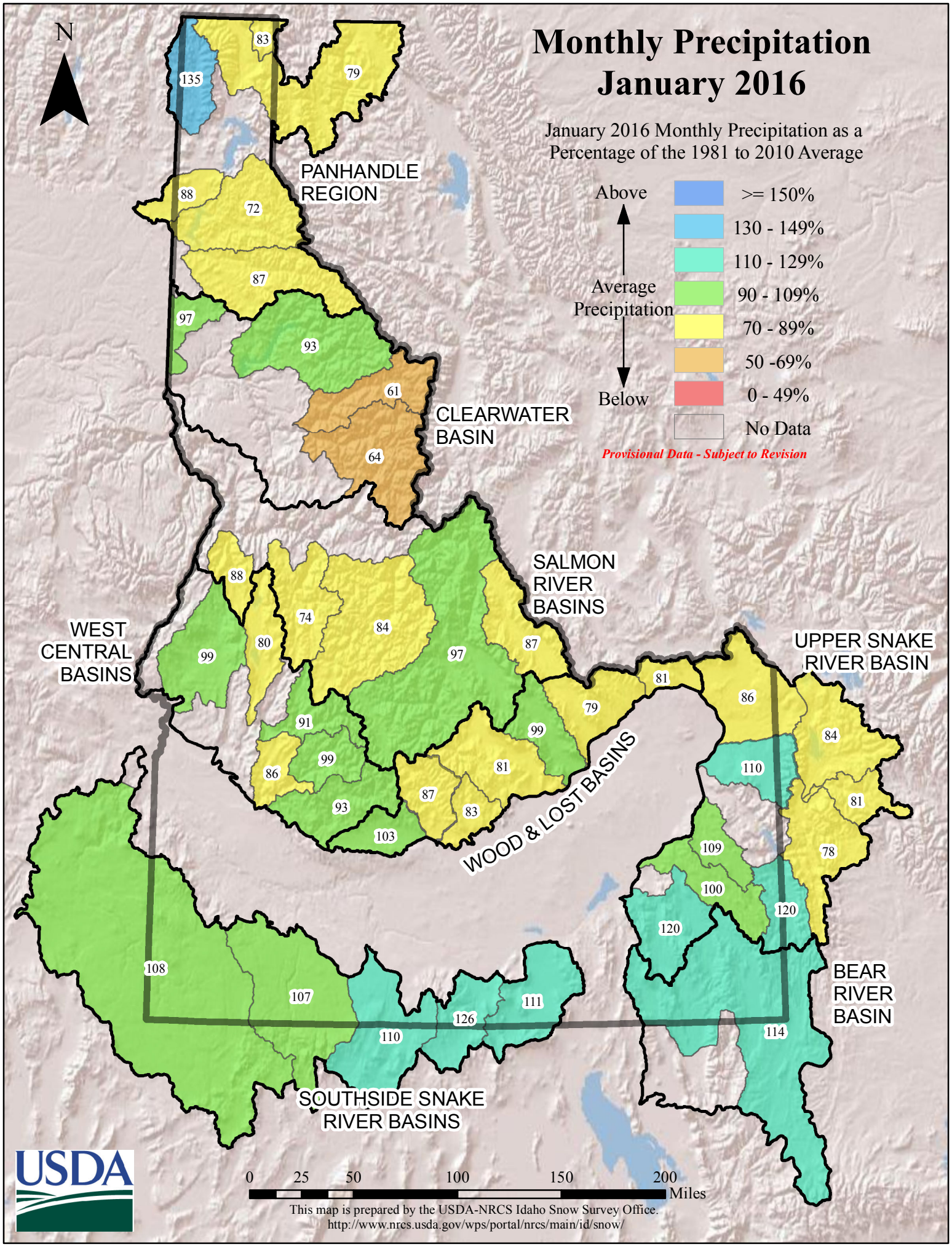
N
Monthly Precipitation
January 2016
January 2016 Monthly Precipitation as a
Percentage of the 1981 to 2010 Average
Above
Average
Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
PANHANDLE
REGION
CLEARWATER
BASIN
SALMON
RIVER
BASINS
WEST
CENTRAL
BASINS
UPPER SNAKE
RIVER BASIN
WOOD & LOST BASINS
BEAR
RIVER
BASIN
SOUTHSIDE SNAKE
RIVER BASINS
135
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72
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93
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107
111
126
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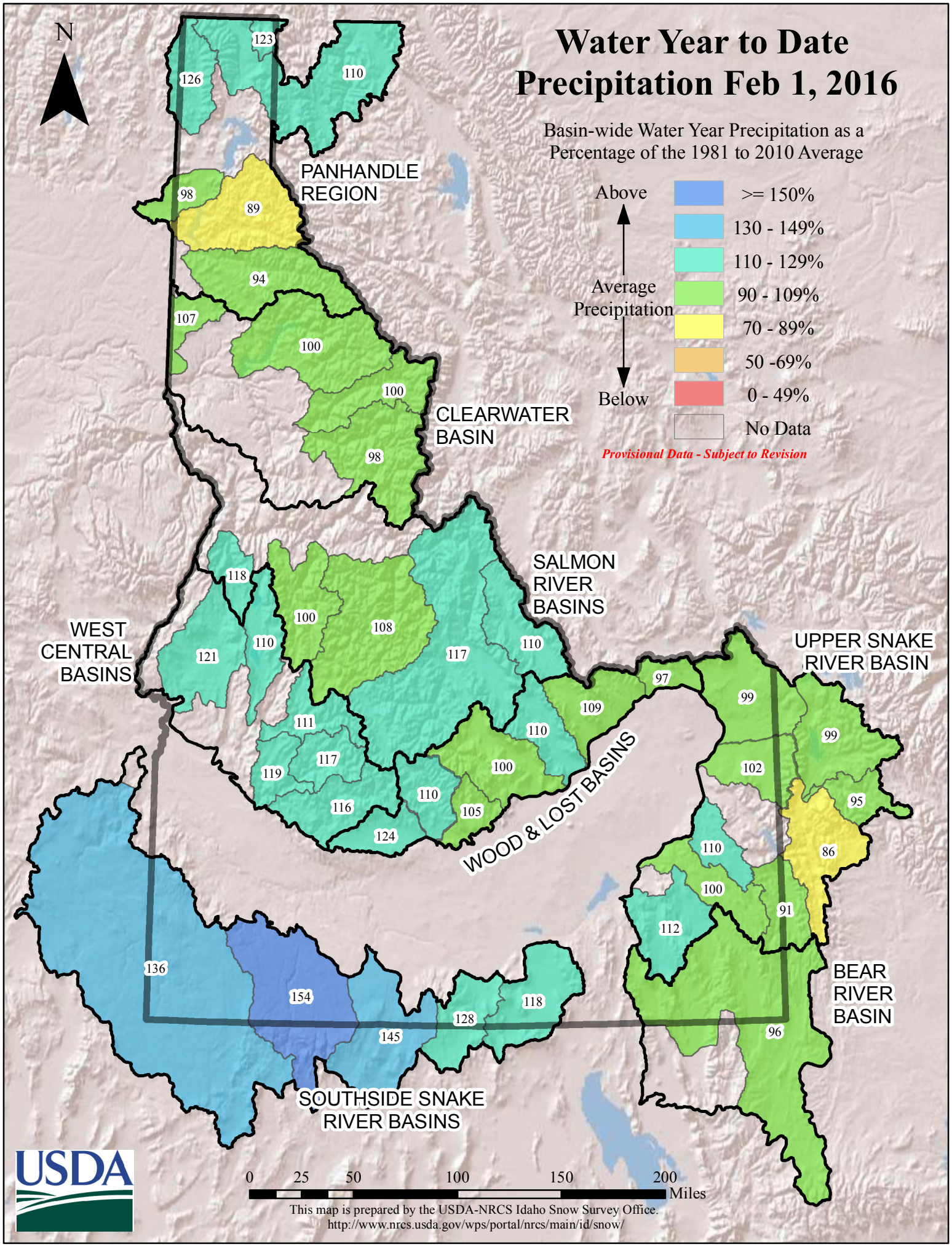
114
USDA
0 25 50 100 150 200
Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/


N
Water Year to Date Precipitation Feb 1, 2016
Basin-wide Water Year Precipitation as a Percentage of the 1981 to 2010 Average
Above
Average Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
123
126
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98
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124
109
97
99
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102
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100
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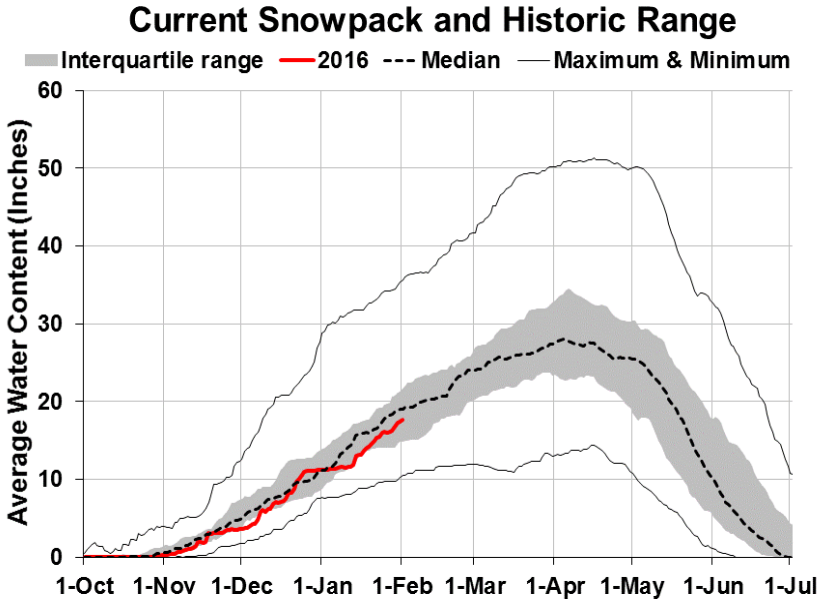
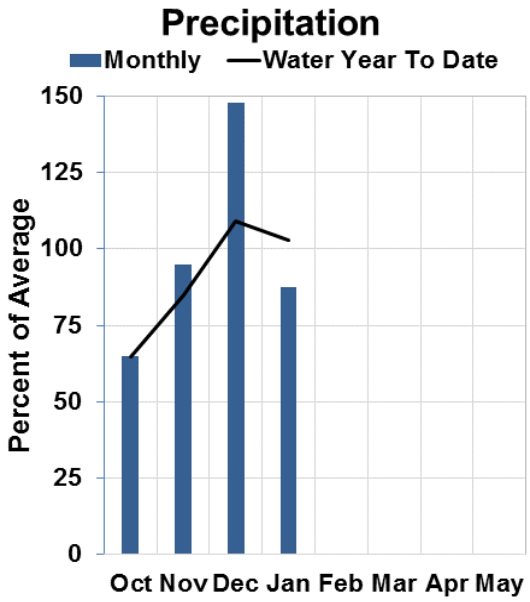
112
136
154
118
128
145
96
USDA
0 25 50 100 150 200
Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/

Panhandle Region

February 1, 2016





WATER SUPPLY OUTLOOK

Following plentiful December precipitation in the Panhandle, water delivery slowed down across most of the region for the month of January. Monthly precipitation in most basins ranged from a low of 72% of average (Coeur d' Alene River) to a high of 97% in the Palouse River drainage. Two notable exceptions exist however, with both Rathdrum Creek and the Priest River reporting >130% of average monthly precipitation. Water year to date precipitation totals are still near or above average, ranging from a low of 89% in the Coeur d' Alene river, to a high of 131% for Rathdrum Creek. Snowpack numbers follow similar patterns as precipitation, with the lowest being the Coeur d' Alene River drainage at 74% of median, while Rathdrum Creek leads the way at 116%. The St. Joe, Spokane, and Kootenai drainages all report around 90% of median snowpack, while the remaining basins are in the neighborhood of 100%. Five of the six Panhandle reservoirs are near or above average storage, ranging from 96% to 118% of average capacity for the end of January. Lake Pend Oreille levels finished January well below average at just 40% of total capacity, which equates to 83% of the average end of January storage.

Forecasted streamflow volumes in many Panhandle drainages were adjusted down slightly from the January 1st projections, owing to the slight reduction in snowpack percentages and the below average precipitation numbers for January. Projected volumes are still strong though, ranging from a low of 88% of average (NF Coeur d' Alene River) to a high of 109% for the Moyie River and Boundary Creek. The NOAA 90 day outlook continues to show the potential for above average temperatures and below average precipitation for the remainder of the winter into spring, which could lead to further reductions in spring/summer streamflow volumes.

Panhandle Region Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Moyie R at Eastport	APR-JUL	320	370	410	109%	445	495	375
	APR-SEP	330	385	420	109%	455	510	385
Kootenai R at Leonia [1 & 2]	APR-JUL	5770	6610	6990	106%	7370	8210	6600
	APR-SEP	6850	7650	8020	106%	8380	9190	7590
Boundary Ck nr Porthill	APR-JUL	104	118	128	109%	137	151	117
	APR-SEP	109	123	133	108%	143	158	123
Clark Fork R at Whitehorse Rapids [1 & 2]	APR-JUL	7300	9020	9800	93%	10600	12300	10500
	APR-SEP	8110	9930	10800	94%	11600	13400	11500
Pend Oreille Lake Inflow [2]	APR-JUL	8930	10200	11000	93%	11800	13100	11800
	APR-SEP	9850	11200	12000	94%	12900	14200	12800
Priest R nr Priest River [2]	APR-JUL	655	755	820	105%	885	985	780
	APR-SEP	690	795	870	105%	940	1050	830
NF Coeur dAlene R at Enaville	APR-JUL	395	525	615	88%	700	830	700
	APR-SEP	430	560	650	88%	735	865	740
St. Joe R at Calder [2]	APR-JUL	820	950	1040	99%	1120	1250	1050
	APR-SEP	880	1010	1100	98%	1190	1320	1120
Spokane R nr Post Falls [2]	APR-JUL	1590	1960	2210	92%	2460	2820	2390
	APR-SEP	1670	2030	2280	92%	2530	2900	2480
Spokane R at Long Lake	APR-JUL	1800	2210	2490	95%	2760	3170	2620
	APR-SEP	1990	2400	2680	94%	2960	3370	2850

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

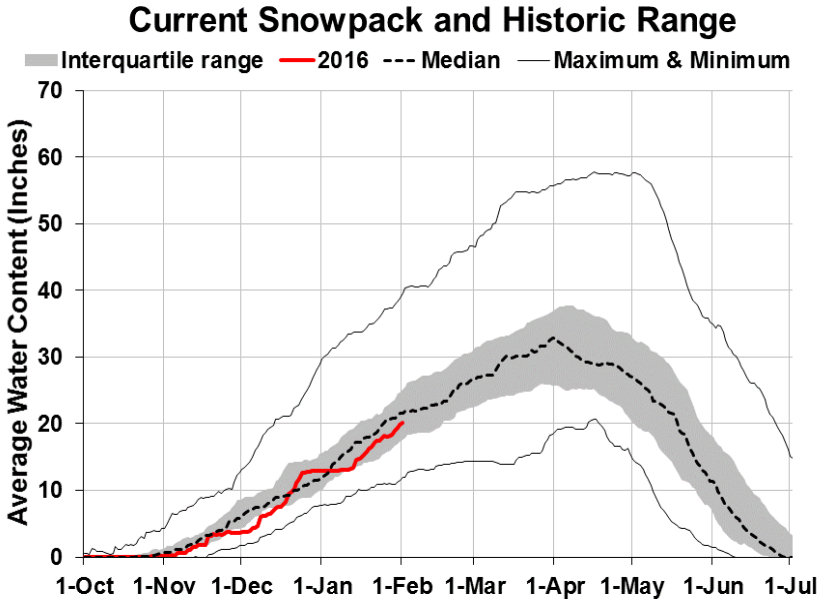
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

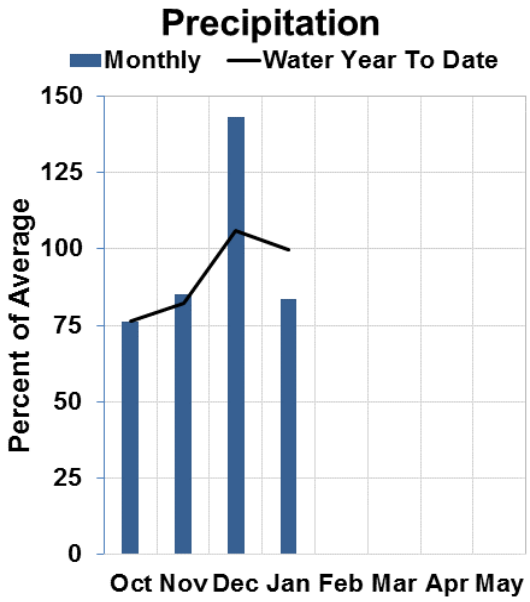
Reservoir Storage (KAF): End of January 2016				
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	2523.5	2973.0	2375.0	3451.0
Flathead Lake	990.7	925.5	955.6	1791.0
Noxon Rapids Reservoir	324.5	321.9	315.0	335.0
Lake Pend Oreille	629.3	534.8	753.9	1561.3
Priest Lake	54.2	50.4	56.7	119.3
Lake Coeur d' Alene	114.1	154.1	96.3	238.5

Watershed Snowpack Analysis: February 1, 2016			
Basin Name	# of Sites	% of Median 2016	2015
Moyie River	6	103%	77%
Priest River	5	100%	59%
Rathdrum Creek	4	116%	47%
Coeur d' Alene River	6	74%	52%
St. Joe River	4	89%	67%
Spokane River	14	89%	57%
Palouse River	2	104%	44%
Kootenai ab Bonners Ferry	19	92%	74%

Clearwater River Basin

February 1, 2016





WATER SUPPLY OUTLOOK

January was drier than normal across the Clearwater basin, with the basin as a whole receiving 85% of average precipitation. There was a strong north-south divide evident, with the NF Clearwater receiving 93% of average January precipitation, while the Lochsa and Selway received just 61% and 64% respectively. Aided by the wet December, water year to date totals are still right on target, ranging from a low of 98% of average in the Selway, to a high of 100% of average in the Clearwater and Lochsa drainages. Snowpack numbers across the Clearwater are fairly consistent, ranging from 90% of median values in the Lochsa, up to 94% on the NF of the Clearwater. The Clearwater basin as a whole is at 94% of median snowpack, which is a slight reduction (percentage wise) from the January 1st total, but is still about 10% ahead of the February 1st number from 2015. Dworshak reservoir is at 2347 KAF, which is 68% of capacity, and 101% of average for this time of year.

Dworshak reservoir inflows are projected to be 108% of average for both the APR-JUL and APR-SEP forecast periods, while the Selway, Lochsa, and Clearwater River at Orofino are all projected to be nearly 100% of average volumes. Further downstream, the Clearwater River at Spalding is projected to have 102% of average flows. With good overall precipitation and near normal snowpack, there should be abundant recreational opportunities for the river folk among us. Let's hope that the potential for above average temperatures and below average precipitation isn't realized, and that the Clearwater finishes the winter on a solid note!

Clearwater River Basin Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Selway R nr Lowell	APR-JUL	1500	1730	1890	98%	2040	2280	1920
	APR-SEP	1580	1820	1980	98%	2140	2380	2020
Lochsa R nr Lowell	APR-JUL	1110	1280	1390	99%	1500	1670	1410
	APR-SEP	1170	1340	1460	99%	1580	1750	1480
Dworshak Reservoir Inflow [2]	APR-JUL	2080	2390	2610	108%	2830	3140	2410
	APR-SEP	2230	2550	2770	108%	2990	3310	2570
Clearwater R at Orofino	APR-JUL	3240	3840	4240	98%	4650	5250	4310
	APR-SEP	3420	4040	4460	98%	4870	5490	4540
Clearwater R at Spalding [2]	APR-JUL	5490	6420	7050	102%	7680	8610	6890
	APR-SEP	5830	6780	7430	102%	8070	9020	7270

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

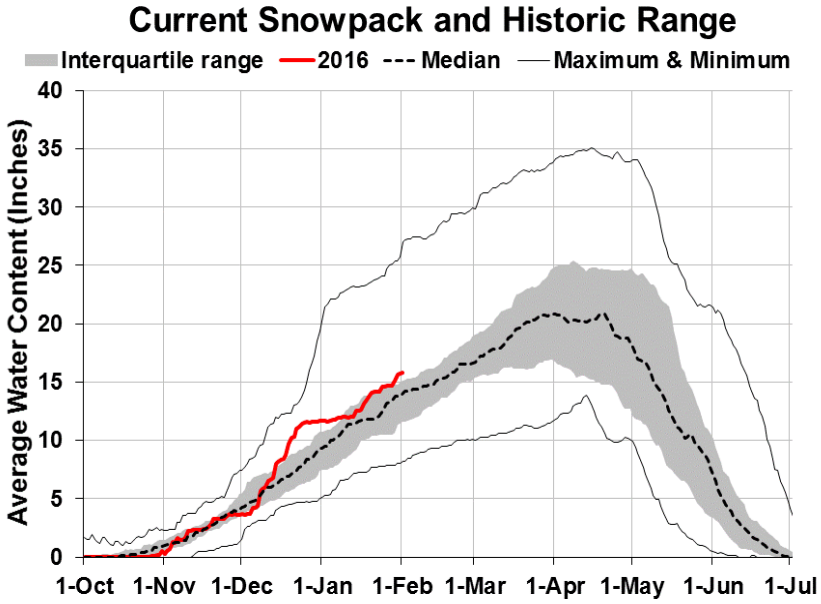
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

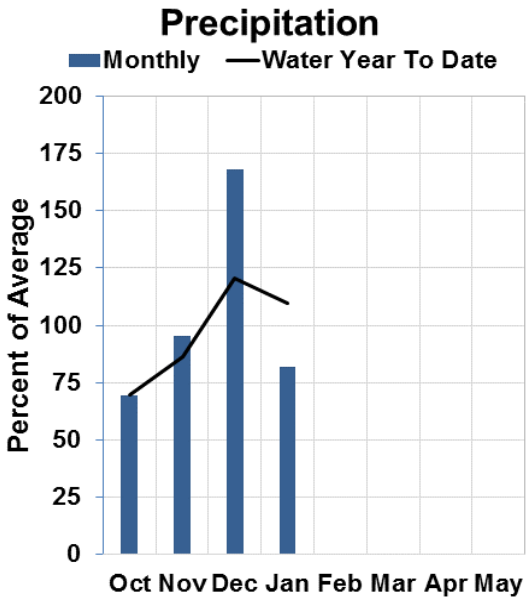
Reservoir Storage (KAF): End of January 2016				
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	2347.1	2599.9	2335.0	3468.0

Watershed Snowpack Analysis: February 1, 2016			
Basin Name	# of Sites	% of Median 2016	2015
NF Clearwater River	9	94%	77%
Lochsa River	4	90%	93%
Selway River	5	91%	110%
Clearwater Basin Total	18	94%	83%

Salmon River Basin

February 1, 2016





WATER SUPPLY OUTLOOK

Following ample December precipitation across the Salmon River basins, the first half of January came in dry. Around mid-month some smaller storm cycles developed, adding to both snowpack and precipitation totals. However, monthly precipitation across the basin was just 84% of normal, with sub basins ranging from a low of 74% (SF Salmon River) to a high of 97% of average (Salmon River above Salmon). Total precipitation for the water year to data looks substantially better, with the Salmon River basin as a whole at 110%. Snowpack numbers in the Salmon River basin remained excellent throughout January, ranging from a high of 131% of median in the Little Salmon, to a low of 111% in the SF of the Salmon River basin. Rafting season on the Middle Fork of the Salmon is setting up well with 118% of median snowpack, while the Lemhi is at 119%, and the Salmon as a whole is at 117% of median snowpack.

Projected streamflow volumes for the spring and summer reflect bountiful snow in most basins, with the Middle Fork of the Salmon projected to have 118% of average volumes, while the Salmon River at Salmon (111%) and at White Bird (107%) shows that the strong forecast numbers are not limited to the upper reaches and tributaries of the larger rivers. Given how well the winter has set up, let's hope that the slightly elevated potential for above average temperatures doesn't result in an early or fast runoff!

Salmon River Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Salmon R at Salmon	APR-JUL	595	750	860	111%	965	1120	775
	APR-SEP	685	870	995	111%	1120	1300	900
Lemhi R nr Lemhi	APR-JUL	38	56	69	93%	85	110	74
	APR-SEP	49	69	85	94%	102	130	90
MF Salmon R at MF Lodge	APR-JUL	550	710	815	118%	925	1090	690
	APR-SEP	610	785	905	118%	1030	1210	770
Sf Salmon R nr Krassel Ranger Station	APR-JUL	205	250	280	104%	310	350	270
	APR-SEP	220	265	295	102%	325	365	290
Johnson Ck at Yellow Pine Id	APR-JUL	139	167	186	97%	205	235	191
	APR-SEP	150	178	198	97%	215	245	205
Salmon R at White Bird	APR-JUL	4220	5130	5750	107%	6370	7280	5370
	APR-SEP	4660	5670	6350	107%	7040	8040	5940

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

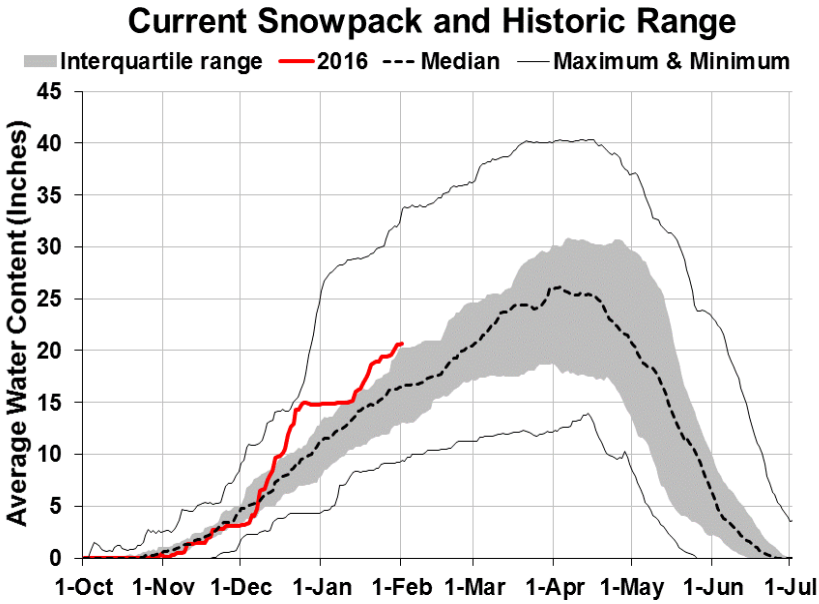
1) 90% and 10% exceedance probabilities are actually 95% and 5%

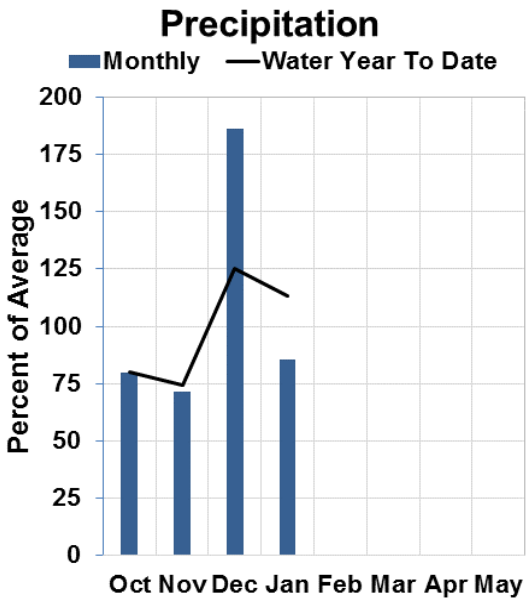
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Watershed Snowpack Analysis: February 1, 2016 Basin Name	# of Sites	% of Median 2016	2015
Salmon River ab Salmon	7	117%	96%
Lemhi River	7	119%	111%
MF Salmon River	3	118%	83%
SF Salmon River	3	111%	82%
Little Salmon River	4	131%	80%
Salmon Basin Total	24	117%	96%

West Central Basins

February 1, 2016





WATER SUPPLY OUTLOOK

After a spectacular month of precipitation in December in the West Central basins, precipitation totals for January were closer to average. The first two weeks of January were dry, but an active weather pattern set up around mid-month and stuck around for the remainder of the month. Resulting, the Boise, Weiser, and Payette River basins received about 85% to 100% of average precipitation in January. Water year to date precipitation for these same basins is 110% to 120% of average. The precipitation in January largely arrived as snow in the West Central basins, and the snowpack remains strong and consistent across sub-drainages. With the exception of Mann Creek (which is represented by Bear Saddle SNOTEL), all drainages in the West Central basins are about 115% to 125% of normal snowpack. The Boise and Payette River systems are 85% to 115% of average for February 1st, and about 30% to 70% of capacity. Mann Creek Reservoir is only 51% of average and 16% of capacity, but with the fantastic snowpack in the high country that feed Mann Creek it should fill.

As of February 1st, streamflow forecasts in the West Central basins are very similar to January 1st forecasts, which was to be expected after near normal conditions during January. The highest April-July forecast point in these basins is the Weiser River near Weiser, which is 126% of average (465 KAF) and the lowest forecast is 114% of average (91 KAF) for Lake Fork of the Payette River near McCall. As of February 1st, the 2016 water supply outlook is slightly above normal for the West Central basins as a whole and is likely to provide adequate irrigation supplies.

West Central Basins Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----Projected Volume----Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
SF Boise R at Anderson Ranch Dam [2]	APR-JUL	400	495	555	117%	620	715	475
	APR-SEP	425	525	590	116%	655	755	510
Boise R nr Twin Springs	APR-JUL	535	630	695	119%	760	855	585
	APR-SEP	580	680	750	118%	820	920	635
Mores Ck nr Arrowrock Dam	APR-JUL	86	117	140	122%	165	205	115
	APR-SEP	90	121	145	122%	172	215	119
Boise R nr Boise [2]	APR-JUL	1130	1360	1510	120%	1660	1890	1260
	APR-SEP	1240	1470	1620	119%	1780	2000	1360
Lake Fork Payette R nr McCall	APR-JUL	73	83	91	114%	99	111	80
	APR-SEP	75	86	94	113%	102	115	83
NF Payette R at Cascade [2]	APR-JUL	415	500	560	115%	615	700	485
	APR-SEP	405	490	550	111%	610	695	495
NF Payette R nr Banks [2]	APR-JUL	565	665	735	118%	805	905	625
	APR-SEP	530	640	715	112%	790	900	640
SF Payette R at Lowman	APR-JUL	355	420	465	116%	515	590	400
	APR-SEP	400	475	525	115%	580	665	455
Deadwood Reservoir Inflow [2]	APR-JUL	109	128	141	115%	154	173	123
	APR-SEP	116	136	150	115%	164	185	131
Payette R nr Horseshoe Bend [2]	APR-JUL	1430	1650	1790	121%	1940	2150	1480
	APR-SEP	1420	1680	1850	113%	2030	2290	1630
Weiser R nr Weiser	FEB-JUL	470	640	770	125%	915	1150	615
	APR-JUL	280	385	465	126%	550	695	370
	APR-SEP	305	410	495	124%	585	735	400

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of January 2016

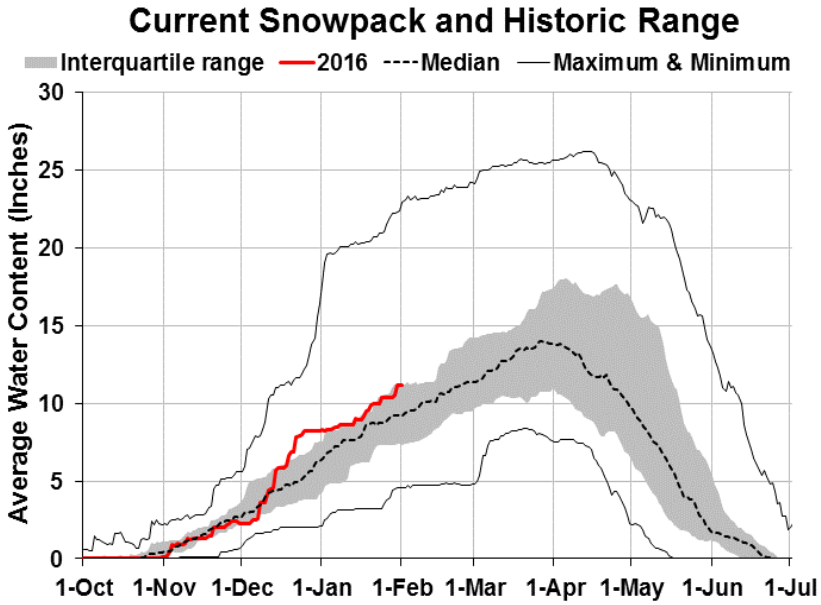
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	229.6	259.2	256.4	450.2
Arrowrock Reservoir	196.9	246.9	174.8	272.2
Lucky Peak Reservoir	88.5	96.4	103.5	293.2
Sub-Basin Total	**515.0**	**602.5**	**534.7**	**1015.6**
Deadwood Reservoir	72.2	114.4	87.9	161.9
Cascade Reservoir	399.2	471.2	455.5	693.2
Sub-Basin Total	**471.4**	**585.6**	**543.4**	**855.1**
Lake Lowell	98.6	92.1	92.8	165.2
Mann Creek Reservoir	1.8	3.1	3.6	11.1

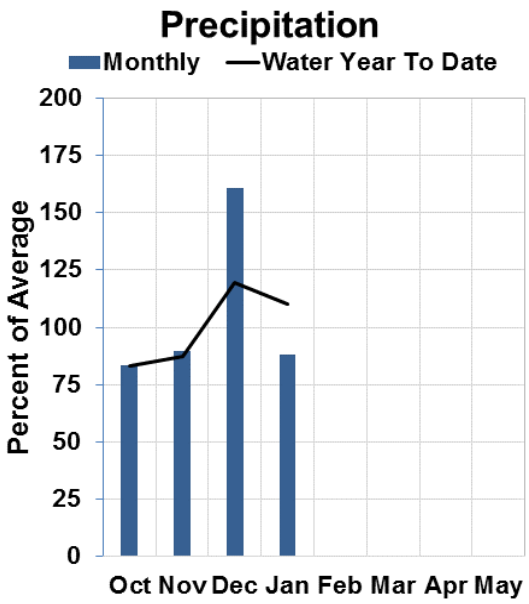
Watershed Snowpack Analysis: February 1, 2016

Basin Name	# of Sites	% of Median 2016	2015
SF Boise River	8	125%	87%
MF & NF Boise Rivers	6	119%	91%
Mores Creek	4	125%	85%
Canyon Creek	4	137%	66%
Boise Basin Total	17	124%	84%
NF Payette River	9	120%	78%
SF Payette River	5	122%	81%
Payette Basin Total	16	121%	79%
Mann Creek	1	150%	72%
Weiser Basin Total	7	117%	65%

Wood & Lost River Basins

February 1, 2016





WATER SUPPLY OUTLOOK

Precipitation during January in the Wood and Lost River basins was below average as a whole. Camas Creek drainage was best off, at about 100% of average for January, while the most easterly drainages (Camas-Beaver Creeks and Birch-Medicine Lodge Creeks) received the least precipitation at about 80% of average. Water year to date precipitation in the Wood and Lost River basins is largely above average, ranging from about 100% to 125% of average. Snowpack in the Wood and Lost River basins mirrors water year to date percentages, with all basins holding about 100% to 125% of normal snow water equivalent. One drainage that is an exception to this is once again Camas Creek, which is about 140% of normal! The Big Wood basin total is at about 125% of normal snowpack, while the Big Lost basin total is about 100% of normal. Current reservoir storage in the Wood and Lost basins is mixed, with Mackay, Little Wood, and Magic reservoirs at 104%, 70%, and 48% of average, respectively.

After a much below runoff season during 2015 for all forecast points in the Wood and Lost River basins, the 2016 outlook is much better as of February 1st. Camas creek near Blaine, which received an observed April-July flow of 6.2 KAF during 2015, is the highest forecast point at 104 KAF or 127% of average, while the Big Lost at Howell and below Mackay Reservoir are tied for the lowest forecast point at 103% of average. However, because of the low storage, water supplies are likely to be marginally adequate based on the 50% Chance of Exceedance Forecasts in the Big Wood, Big Lost and Little Lost basins.

Wood and Lost Basins Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Camas Ck at Camas	APR-JUL	10.7	23	31	111%	39	51	28
Little Lost R nr Howe	APR-JUL	18.5	25	29	104%	34	40	28
	APR-SEP	21	30	36	106%	42	50	34
Big Lost R at Howell Ranch	APR-JUL	92	135	164	103%	193	235	159
	APR-SEP	103	152	185	103%	220	270	180
Big Lost R bl Mackay Reservoir	APR-JUL	53	97	127	103%	157	200	123
	APR-SEP	69	120	154	103%	189	240	150
Little Wood R ab High Five Ck	MAR-JUL	32	62	83	108%	103	134	77
	MAR-SEP	34	67	89	109%	111	144	82
	APR-JUL	26	55	75	109%	95	125	69
	APR-SEP	28	60	81	108%	103	135	75
Little Wood R nr Carey [2]	MAR-JUL	33	67	90	105%	114	148	86
	MAR-SEP	35	72	96	104%	121	157	92
	APR-JUL	25	58	81	105%	103	136	77
	APR-SEP	28	63	86	104%	110	145	83
Big Wood R at Hailey	APR-JUL	161	220	260	111%	300	355	235
	APR-SEP	179	245	290	109%	335	400	265
Big Wood R ab Magic Reservoir	APR-JUL	86	151	196	115%	240	305	170
	APR-SEP	92	161	210	115%	255	325	182
Camas Ck nr Blaine	APR-JUL	48	79	104	127%	133	182	82
	APR-SEP	49	80	105	127%	134	183	83
Big Wood R bl Magic Dam [2]	APR-JUL	120	220	285	114%	355	455	250
	APR-SEP	129	235	305	115%	375	480	265

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

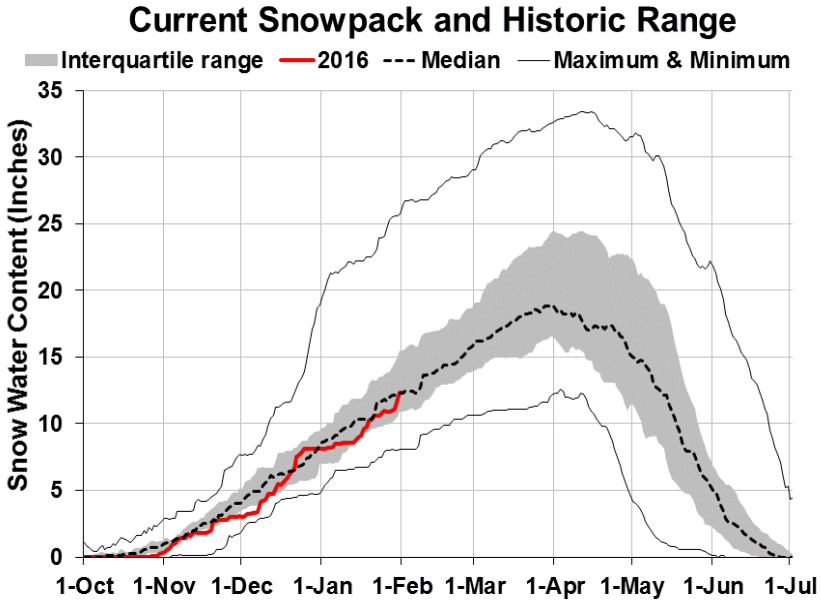
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

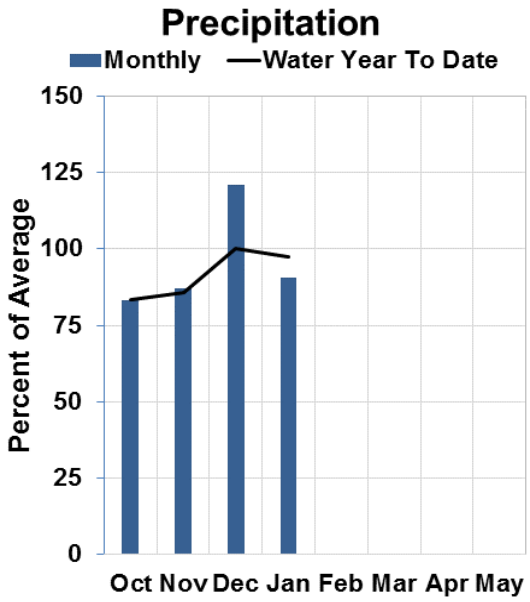
Reservoir Storage (KAF): End of January 2016				
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Mackay Reservoir	27.0	27.9	26.0	44.4
Little Wood Reservoir	11.4	12.2	16.3	30.0
Magic Reservoir	32.9	38.1	68.9	191.5

Watershed Snowpack Analysis: February 1, 2016			
Basin Name	# of Sites	% of Median 2016	2015
Camas-Beaver Creeks	4	109%	72%
Birch-Medicine Lodge Creeks	2	118%	92%
Little Lost River	3	109%	100%
Big Lost River ab Mackay	6	102%	79%
Big Lost Basin Total	7	101%	80%
Fish Creek	3	98%	70%
Little Wood River	4	111%	83%
Big Wood River ab Hailey	7	117%	93%
Camas Creek	5	139%	77%
Big Wood Basin Total	12	125%	87%

Upper Snake River Basins

February 1, 2016





WATER SUPPLY OUTLOOK

Precipitation across the Upper Snake River basins showed substantial variability with Pacific Creek (in the north) receiving only 73% of typical January values, while in the south the Salt and Portneuf rivers both reported 120%. For the water year to date, precipitation values range from a low of 86% (Hoback River) to a high of 112% (Portneuf), while the Snake River above American Falls is right on target at 98% of average. Snowpack numbers across the Upper Snake are very good overall, ranging from a low of 91% of median snowpack (Hoback and Gros Ventre rivers) to a high 114% in the Portneuf drainage, while many basins are reporting snowpack percentages within 5% of median. Looking at the Upper Snake as a whole, the Snake River above American Falls has 98% of median snowpack. In most cases reservoir levels in the Upper Snake are trailing slightly behind where they were at this time last year, but are still near or above average for the end of January. Jackson Lake and Palisades are at 131% and 87% of average, while their combined storage is at 101% of average for the end of January. Taken as a group, Henrys Lake, Island Park Reservoir, and Grassy Lake have a combined storage of 187 KAF, which is 97% of average. Moving downstream, Blackfoot and American Falls reservoirs are at 98% and 82% of average values.

Projected streamflow volumes in the Upper Snake range from a low of 85% of average for Willow Creek to a high of 107% for the Portneuf River. However, most basins are projected to have approximately 90-95% of average flows, with the Snake at Irwin, Heise, and Neeley all forecast at 90% of average. Based on current reservoir storage and using the 50% chance of exceedance forecasts, irrigation supplies should be adequate, but could be tight if the 70% chance of exceedance Forecasts occurs.

Upper Snake River Basin Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton [2]	APR-JUL	350	440	495	93%	555	640	530
	APR-SEP	500	600	670	94%	740	845	710
Falls R nr Ashton [2]	APR-JUL	280	325	355	97%	385	430	365
	APR-SEP	340	390	425	98%	465	515	435
Teton R nr Driggs	APR-JUL	93	122	142	92%	162	191	154
	APR-SEP	117	154	179	93%	205	240	193
Teton R nr St Anthony	APR-JUL	235	300	345	95%	390	450	365
	APR-SEP	285	360	410	94%	460	535	435
Henrys Fk nr Rexburg [2]	APR-JUL	935	1150	1310	94%	1460	1680	1400
	APR-SEP	1190	1480	1670	93%	1870	2150	1790
Snake R at Flagg Ranch	APR-JUL	335	405	450	97%	495	560	465
	APR-SEP	370	440	490	96%	540	615	510
Snake R nr Moran [2]	APR-JUL	550	655	725	95%	800	905	765
	APR-SEP	600	715	795	94%	880	995	845
Pacific Ck at Moran	APR-JUL	103	127	144	88%	160	185	164
	APR-SEP	110	135	152	88%	169	195	173
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	192	235	260	93%	290	330	280
	APR-SEP	215	265	295	92%	330	380	320
Snake R ab Reservoir nr Alpine [2]	APR-JUL	1430	1700	1890	87%	2070	2340	2170
	APR-SEP	1650	1960	2180	87%	2390	2710	2500
Greys R ab Reservoir nr Alpine	APR-JUL	198	245	275	90%	310	355	305
	APR-SEP	230	285	325	90%	360	415	360
Salt R ab Reservoir nr Etna	APR-JUL	148	220	265	88%	310	380	300
	APR-SEP	193	275	330	89%	385	465	370
Snake R nr Irwin [2]	APR-JUL	1990	2410	2700	90%	3000	3420	3010
	APR-SEP	2320	2820	3160	90%	3500	4000	3500
Snake R nr Heise [2]	APR-JUL	2150	2600	2910	90%	3210	3670	3240
	APR-SEP	2540	3060	3420	90%	3780	4310	3780
Willow Ck nr Ririe [2]	MAR-JUL	24	42	57	85%	74	103	67
Portneuf R at Topaz	MAR-JUL	52	69	81	107%	93	110	76
	MAR-SEP	61	83	98	105%	113	135	93
Snake R at Neeley [2]	APR-JUL	1000	1820	2380	90%	2930	3750	2650
	APR-SEP	925	1850	2480	88%	3110	4030	2810

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

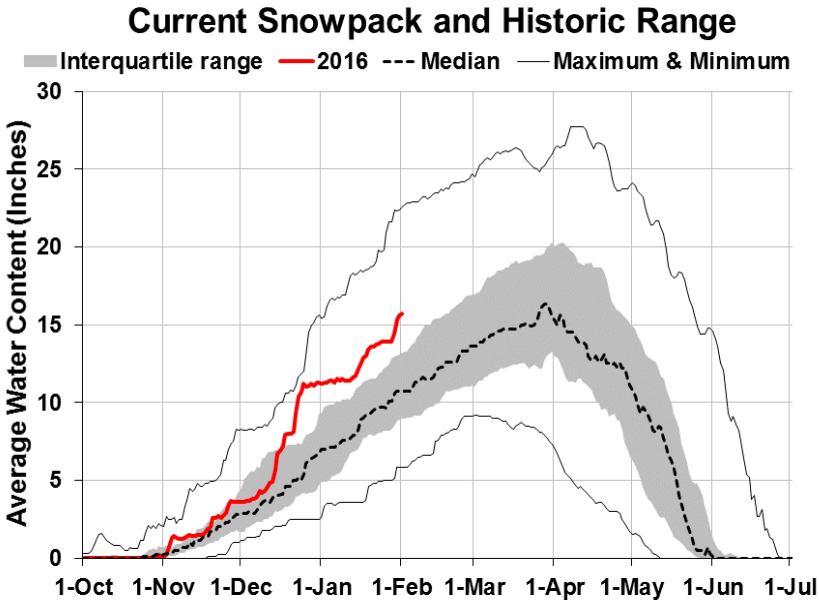
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

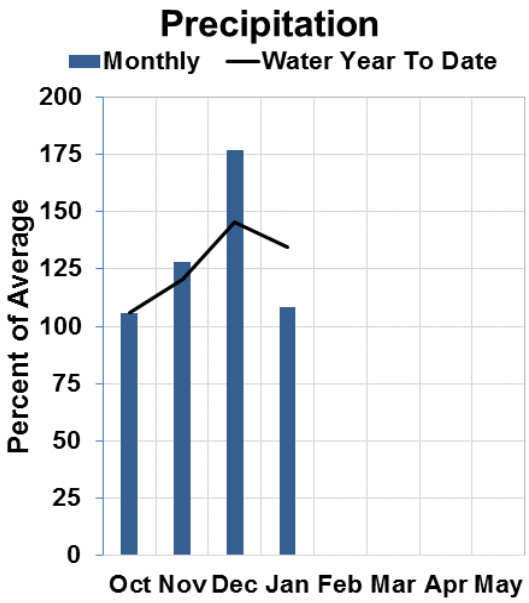
Reservoir Storage (KAF): End of January 2016				
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Jackson Lake	563.6	649.4	431.2	847.0
Palisades Reservoir	793.6	1133.0	911.2	1400.0
Sub-Basin Total	**1357.2**	**1782.4**	**1342.4**	**2247.0**
Henrys Lake	76.8	88.3	80.1	90.4
Island Park Reservoir	96.7	110.3	100.0	135.2
Grassy Lake	13.1	12.7	11.9	15.2
Sub-Basin Total	**186.6**	**211.3**	**192.0**	**240.8**
Ririe Reservoir	45.8	45.5	38.7	80.5
Blackfoot Reservoir	173.6	159.8	176.3	337.0
American Falls Reservoir	919.1	1183.9	1116.0	1672.6
Basin-Wide Total	**2682.3**	**3382.9**	**2865.4**	**4577.9**

Watershed Snowpack Analysis: February 1, 2016			
Basin Name	# of Sites	% of Median 2016	2015
Henrys Fork-Falls River	8	102%	93%
Teton River	7	100%	104%
Henrys Fork ab Rexburg	15	101%	98%
Snake River ab Jackson Lake	12	97%	99%
Pacific Creek	4	100%	109%
Buffalo Fork	3	93%	126%
Gros Ventre River	4	91%	110%
Hoback River	6	91%	121%
Greys River	4	99%	116%
Salt River	5	92%	103%
Snake ab Palisades Resv	33	95%	107%
Willow Creek - Ririe	7	108%	77%
Blackfoot River	4	97%	93%
Portneuf River	6	114%	85%
Snake River ab American Falls	50	98%	100%

Southside Snake River Basins

February 1, 2016





WATER SUPPLY OUTLOOK

January precipitation in the Southside Snake River basins was less than the previous two months, but still above average for January. Goose and Trapper Creek basins were the best off, at about 126% of average while the Owyhee Basin received the least precipitation in January at about 108% of average. The Southside Snake River basins continue to lead the state with the best snowpack with respect to normal, with all basins coming in at about 140% to 155% of normal for February 1st. The snowpack graph above demonstrates that the average water content (red line) in the Southside Snake River basin snowpack as of February 1st is already about the same as the historic median peak (black dashed line), which typically occurs just before April 1st. Oakley, Salmon Falls Creek, Wild Horse, and Lake Owyhee reservoirs are all between 10% and 18% of capacity, meaning there is little storage carryover from 2015. The lack of carryover was expected and resulted from a multiyear snow drought that plagued the Southside Snake River basins.

The good news is that there should be substantial runoff volumes and irrigation supplies in all of the major rivers that comprise the Southside Snake River basins. Oakley Reservoir inflow is forecast at 136% of average (38 KAF) during March-July, and Salmon Falls creek to the west is forecast at 153% of average (124 KAF). The Bruneau River is forecast at 141% of average during March-July, while the Owyhee River near Rome is forecast at 156% of average (905 KAF) during February-July. Overall, the water outlook looks good for farmers and river rafters alike in the Southside Snake River basins.

Southside Snake River Basins Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Goose Ck abv Trapper Ck nr Oakley	MAR-JUL	18.2	26	31	141%	38	48	22
	MAR-SEP	18.9	27	33	138%	40	51	24
Trapper Ck nr Oakley	MAR-JUL	5.5	6.6	7.4	125%	8.3	9.6	5.9
	MAR-SEP	6.6	7.8	8.7	123%	9.6	11	7.1
Oakley Reservoir Inflow	MAR-JUL	23	32	38	136%	46	57	28
	MAR-SEP	26	35	42	135%	49	62	31
Salmon Falls Ck nr San Jacinto	MAR-JUL	86	107	124	153%	141	169	81
	MAR-SEP	89	111	128	151%	145	173	85
Bruneau R nr Hot Spring	MAR-JUL	205	255	290	141%	325	375	205
	MAR-SEP	215	265	300	140%	340	390	215
Reynolds Ck at Tollgate	MAR-JUL	5.2	7.9	9.7	110%	11.6	14.3	8.8
Owyhee R nr Gold Ck [2]	MAR-JUL	30	42	52	186%	63	82	28
	MAR-SEP	29	40	49	181%	59	77	27
	APR-JUL	20	32	42	191%	54	76	22
Owyhee R nr Rome	FEB-JUL	580	770	905	156%	1040	1230	580
	FEB-SEP	595	790	925	155%	1060	1260	595
	APR-SEP	285	430	525	144%	620	765	365
Owyhee R bl Owyhee Dam [2]	FEB-JUL	585	795	955	150%	1130	1420	635
	FEB-SEP	615	825	990	149%	1160	1450	665
	APR-SEP	315	450	555	137%	675	870	405
Snake R bl Lower Granite Dam [1]	APR-JUL	9700	16100	19000	96%	21900	28300	19848
	APR-SEP	11100	18300	21600	97%	24800	32000	22280

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of January 2016

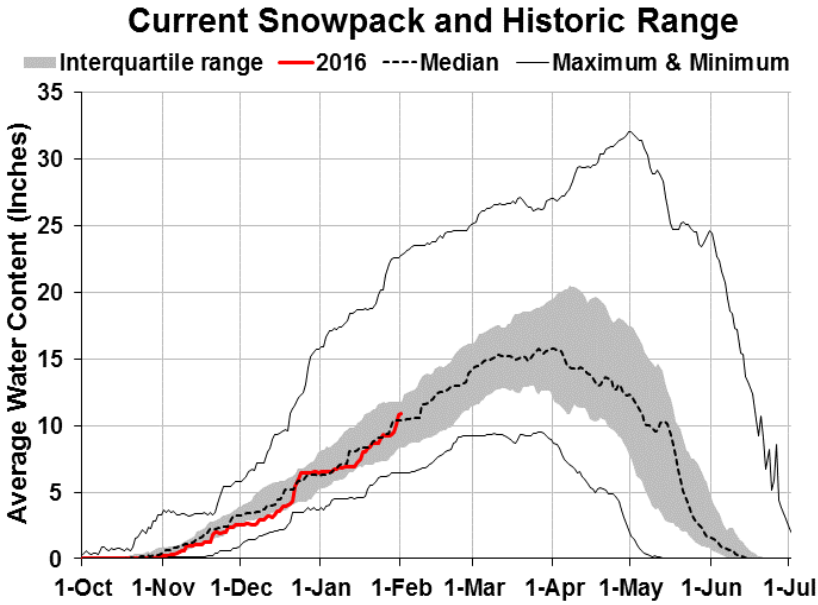
Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Oakley Reservoir	13.8	17.2	22.5	75.6
Salmon Falls Reservoir	18.6	20.2	43.3	182.6
Wild Horse Reservoir	11.1	12.2	33.2	71.5
Lake Owyhee	98.1	119.7	345.3	715.0
Brownlee Reservoir	1094.8	1634.4	1189.0	1420.0

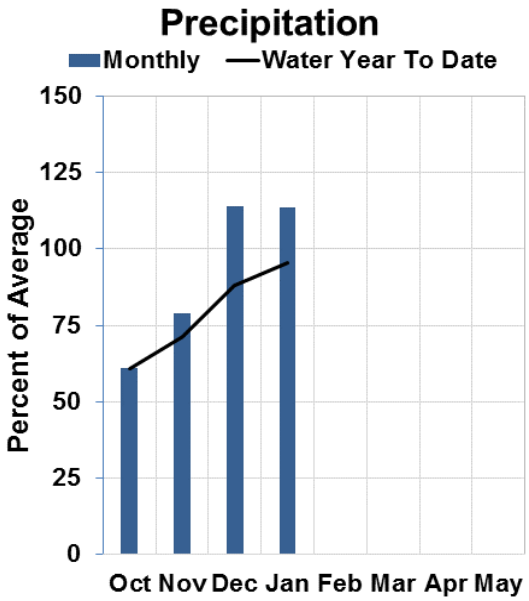
Watershed Snowpack Analysis: February 1, 2016

Basin Name	# of Sites	% of Median 2016	2015
Raft River	2	140%	117%
Goose-Trapper Creeks	2	141%	113%
Salmon Falls Creek	7	153%	104%
Bruneau River	8	153%	88%
Reynolds Creek	7	136%	81%
Owyhee Basin Total	11	148%	61%
Owyhee Basin Snotel Total	8	154%	68%

Bear River Basin

February 1, 2016





WATER SUPPLY OUTLOOK

Precipitation in the Bear River basin was above average for the second consecutive month in January, at about 115% of average. Montpelier Creek, Mink Creek, and Cub River drainages all received about 100% to 110% of average precipitation. It should be noted that each of the aforementioned drainages are represented by a single SNOTEL site, which likely leads to an underrepresentation of precipitation spatial variability in these drainages. Water year to date precipitation continues on its upward trajectory in the Bear River basin, as the black line in the precipitation graph above demonstrates, and is about 95% of average as of February 1st. The snowpack in the Bear River basin has been hovering around normal to slightly below normal since late December, but the large snow event that hit nearly all of the West to end January brought significant snow to the Bear River basin high country. The Bear River snowpack above the ID-UT line is now about 98% of normal, while the Bear River above the WY-ID line is about 104% of normal. Reservoir levels are looking good, with Bear Lake at 81% of average (36% full) and Montpelier Reservoir at 145% of average (63% full).

Streamflow forecasts have increased since January 1st, which is to be expected with seasonal temperatures and precipitation conditions exceeding normal during January. Excluding the Bear River below Stewart Dam, all streamflow forecasts in the Bear River basin for April-July are about 85% to 105% of average. Whereas, the Bear River below Stewart Dam is forecast to be 75% of average for the same time period.

Bear River Basin Streamflow Forecasts - February 1, 2016

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bear R nr UT-WY State Line	APR-JUL	63	87	103	92%	120	144	112
	APR-SEP	70	97	115	93%	133	160	123
Bear R ab Resv nr Woodruff	APR-JUL	26	82	120	99%	158	215	121
	APR-SEP	10.2	82	130	102%	178	250	128
Big Ck nr Randolph	APR-JUL	1.84	3.1	4	105%	4.9	6.2	3.8
Smiths Fk nr Border	APR-JUL	39	61	75	84%	89	111	89
	APR-SEP	50	74	90	87%	106	130	104
Bear R bl Stewart Dam [2]	FEB-JUL	11.4	103	165	77%	225	320	215
	FEB-SEP	8.8	111	180	75%	250	350	240
	MAR-JUL	4.8	94	155	76%	215	305	205
	MAR-SEP	4.1	104	172	75%	240	340	230
	APR-JUL	3.7	80	135	74%	190	270	183
	APR-SEP	8.2	87	150	73%	215	305	205
Little Bear at Paradise	APR-JUL	12.4	27	38	93%	48	63	41
Logan R nr Logan	APR-JUL	50	80	100	90%	120	149	111
Blacksmith Fk nr Hyrum	APR-JUL	22	36	46	107%	56	70	43

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of January 2016

Reservoir Name	Current (KAF)	Last Yr (KAF)	Average (KAF)	Capacity (KAF)
Bear Lake	472.2	548.1	584.8	1302.0
Montpelier Reservoir	2.5	2.4	1.7	4.0

Watershed Snowpack Analysis: February 1, 2016

Basin Name	# of Sites	% of Median 2016	2015
Smiths-Thomas Forks	4	95%	109%
Bear River ab WY-ID Line	10	104%	88%
Montpelier Creek	2	86%	88%
Mink Creek	1	87%	72%
Cub River	1	100%	94%
Bear River ab ID-UT Line	18	98%	89%
Malad River	1	107%	86%

Streamflow Adjustment List for All Forecasts Published in Idaho Water Supply Outlook Report: Streamflow forecasts are projections of runoff volumes that would occur without influences from upstream reservoirs or diversions. These values are referred to as natural, unregulated or adjusted flows. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made for each forecast point. **(Revised Feb. 2015).**

Panhandle Region

Kootenai R at Leonia, MT (2)
+ Lake Koocanusa storage change

Moyie R at Eastport – no corrections

Boundary Ck nr Porthill – no corrections

Clark Fork R at Whitehorse Rapids (2)
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Res storage change

Pend Oreille Lake Inflow (2)
+ Pend Oreille R at Newport, WA
+ Hungry Horse Res storage change
+ Flathead Lake storage change
+ Noxon Res storage change
+ Lake Pend Oreille storage change
+ Priest Lake storage change

Priest R nr Priest R (2)
+ Priest Lake storage change

NF Coeur d' Alene R at Enaville - no corrections

St. Joe R at Calder- no corrections

Spokane R nr Post Falls (2)
+ Lake Coeur d' Alene storage change

Spokane R at Long Lake, WA (2)
+ Lake Coeur d' Alene storage change
+ Long Lake, WA storage change

Clearwater River Basin

Selway R nr Lowell - no corrections

Lochsa R nr Lowell - no corrections

Dworshak Res Inflow (2)
+ Clearwater R nr Peck
- Clearwater R at Orofino
+ Dworshak Res storage change

Clearwater R at Orofino - no corrections

Clearwater R at Spalding (2)
+ Dworshak Res storage change

Salmon River Basin

Salmon R at Salmon - no corrections

Lemhi R nr Lemhi – no corrections

MF Salmon R at MF Lodge – no corrections

SF Salmon R nr Krassel Ranger Station – no corrections

Johnson Creek at Yellow pine – no corrections

Salmon R at White Bird - no corrections

West Central Basins

Boise R nr Twin Springs - no corrections

SF Boise R at Anderson Ranch Dam (2)
+ Anderson Ranch Res storage change

Mores Ck nr Arrowrock Dam – no corrections

Boise R nr Boise (2)
+ Anderson Ranch Res storage change
+ Arrowrock Res storage change
+ Lucky Peak Res storage change

SF Payette R at Lowman - no corrections

Deadwood Res Inflow (2)
+ Deadwood R bl Deadwood Res nr Lowman
+ Deadwood Res storage change

Lake Fork Payette R nr McCall – no corrections

NF Payette R at Cascade (2)
+ Payette Lake storage change
+ Cascade Res storage change

NF Payette R nr Banks (2)
+ Payette Lake storage change
+ Cascade Res storage change

Payette R nr Horseshoe Bend (2)
+ Deadwood Res storage change
+ Payette Lake storage change
+ Cascade Res storage change

Weiser R nr Weiser - no corrections

Wood and Lost Basins

Little Lost R bl Wet Ck nr Howe - no corrections

Big Lost R at Howell Ranch - no corrections

Big Lost R bl Mackay Res nr Mackay (2)
+ Mackay Res storage change

Little Wood R ab High Five Ck – no corrections

Little Wood R nr Carey (2)
+ Little Wood Res storage change

Big Wood R at Hailey - no corrections

Big Wood R ab Magic Res (2)
+ Big Wood R nr Bellevue (1912-1996)
+ Big Wood R at Stanton Crossing nr Bellevue (1997 to present)
+ Willow Ck (1997 to present)

Camas Ck nr Blaine – no corrections

Magic Res Inflow (2)
+ Big Wood R bl Magic Dam
+ Magic Res storage change

Upper Snake River Basin

Falls R nr Ashton (2)
+ Grassy Lake storage change
+ Diversions from Falls R ab nr Ashton

Henrys Fork nr Ashton (2)
+ Henrys Lake storage change
+ Island Park Res storage change

Teton R nr Driggs - no corrections

Teton R nr St. Anthony (2)
- Cross Cut Canal into Teton R
+ Sum of Diversions for Teton R ab St. Anthony
+ Teton Dam for water year 1976 only

Henrys Fork nr Rexburg (2)
+ Henrys Lake storage change
+ Island Park Res storage change
+ Grassy Lake storage change
+ 3 Diversions from Falls R ab Ashton-Chester
+ 6 Diversions from Falls R abv Ashton
+ 7 Diversions from Henrys Fk btw Ashton to St. Anthony
+ 21 Diversions from Henrys Fk btw St. Anthony to Rexburg
Snake R nr Flagg Ranch, WY – no corrections
Snake R nr Moran, WY (2)
+ Jackson Lake storage change
Pacific Ck at Moran, WY - no corrections
Buffalo Fork ab Lava nr Moran, WY - no corrections
Snake R ab Res nr Alpine, WY (2)
+ Jackson Lake storage change
Greys R nr Alpine, WY - no corrections
Salt R R nr Etna, WY - no corrections
Palisades Res Inflow (2)
+ Snake R nr Irwin
+ Jackson Lake storage change
+ Palisades Res storage change
Snake R nr Heise (2)
+ Jackson Lake storage change
+ Palisades Res storage change
Ririe Res Inflow (2)
+ Willow Ck nr Ririe
+ Ririe Res storage change
The forecasted natural volume for Willow Creek nr Ririe does not include Grays Lake water diverted from Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Blackfoot R ab Res nr Henry (2)
+ Blackfoot Res storage change
The forecasted Blackfoot Reservoir Inflow includes Grays Lake water diverted from the Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Portneuf R at Topaz - no corrections
American Falls Res Inflow (2)
+ Snake R at Neeley
+ Jackson Lake storage change
+ Palisades Res storage change
+ American Falls storage change
+ Teton Dam for water year 1976 only

Southside Snake River Basins
Goose Ck nr Oakley - no adjustments
Trapper Ck nr Oakley - no adjustments
Oakley Res Inflow - *flow does not include Birch Creek*
+ Goose Ck
+ Trapper Ck
Salmon Falls Ck nr San Jacinto, NV - no corrections
Bruneau R nr Hot Springs - no corrections
Reynolds Ck at Tollgate - no corrections
Owyhee R nr Gold Ck, NV (2)
+ Wildhorse Res storage change
Owyhee R nr Rome, OR – no Corrections
Owyhee Res Inflow (2)
+ Owyhee R bl Owyhee Dam, OR
+ Lake Owyhee storage change
+ Diversions to North and South Canals

Bear River Basin
Bear R nr UT-WY Stateline, UT- no corrections
Bear R abv Res nr Woodruff, UT- no corrections
Big Ck nr Randolph, UT - no corrections
Smiths Fork nr Border, WY - no corrections
Bear R bl Stewart Dam (2)
+ Bear R bl Stewart Dam
+ Rainbow Inlet Canal
Little Bear R at Paradise, UT - no corrections
Logan R nr Logan, UT - no corrections
Blacksmith Fk nr Hyrum, UT - no corrections

Reservoir Capacity Definitions (Units in 1,000 Acre-Feet, KAF)
Different agencies use various definitions when reporting reservoir capacity and contents. Reservoir storage terms include dead, inactive, active, and surcharge storage. This table lists the volumes for each reservoir, and defines the storage volumes NRCS uses when reporting capacity and current reservoir storage. In most cases, NRCS reports usable storage which includes active and/or inactive storage. **(Revised Feb. 2015)**

Basin- Lake or Reservoir	Dead Storage	Inactive Storage	Active Storage	Surcharge Storage	NRCS Capacity	NRCS Capacity Includes
Panhandle Region						
Hungry Horse	39.73	---	**3451.00**	---	**3451.0**	Active
Flathead Lake	Unknown	---	**1791.00**	---	**1791.0**	Active
Noxon	Unknown	---	**335.00**	---	**335.0**	Active
Lake Pend Oreille	**406.20**	**112.40**	**1042.70**	**---**	**1561.3**	Dead + Inactive + Active
Lake Coeur d'Alene	Unknown	13.50	**225.00**	**---**	**238.5**	Inactive + Active
Priest Lake	**20.00**	**28.00**	**71.30**	**---**	**119.3**	Dead + Inactive + Active
Clearwater Basin						
Dworshak	Unknown	**1452.00**	**2016.00**	**---**	**3468.0**	Inactive + Active
West Central Basins						
Anderson Ranch	24.90	**37.00**	**413.10**	---	450.1	Inactive + Active
Arrowrock	Unknown	---	**272.20**	**---**	**272.2**	Active
Lucky Peak	Unknown	**28.80**	**264.40**	13.80	**293.2**	Inactive + Active
Lake Lowell	7.90	**5.80**	**159.40**	---	165.2	Inactive + Active
Deadwood	Unknown	---	**161.90**	**---**	**161.9**	Active
Cascade	Unknown	**46.70**	**646.50**	**---**	**693.2**	Inactive + Active
Mann Creek	1.61	0.24	**11.10**	**---**	**11.1**	Active
Wood and Lost Basins						
Mackay	0.13	---	**44.37**	**---**	**44.4**	Active
Little Wood	Unknown	---	**30.00**	**---**	**30.0**	Active
Magic	Unknown	---	**191.50**	**---**	**191.5**	Active
Upper Snake Basin						
Jackson Lake	Unknown	---	**847.00**	**---**	**847.0**	Active
Palisades	44.10	**155.50**	**1200.00**	**---**	**1400.0**	Dead + Inactive+Active
Henrys Lake	Unknown	---	**90.40**	**---**	**90.4**	Active
Island Park	0.40	---	**127.30**	**7.90**	**135.2**	Active + Surcharge
Grassy Lake	Unknown	---	**15.18**	**---**	**15.2**	Active
Ririe	4.00	6.00	**80.54**	10.00	**80.5**	Active
Blackfoot	0.00	---	**333.50**	3.50	**333.50**	Active (rev. 2/1/2015)
American Falls	Unknown	---	**1672.60**	**---**	**1672.6**	Active
Southside Snake Basins						
Oakley	0.00	---	**75.60**	**---**	**75.6**	Active
Salmon Falls	48.00	**5.00**	**182.65**	**---**	**182.6**	Active + Inactive
Wild Horse	Unknown	---	**71.50**	**---**	**71.5**	Active
Lake Owyhee	406.83	---	**715.00**	**---**	**715.0**	Active
Brownlee	0.45	**444.70**	**975.30**	**---**	**1420.0**	Inactive + Active
Bear River Basin						
Bear Lake	5000.00	119.00	**1302.00**	**---**	**1302.0**	Active:
Capacity does not include 119 KAF that can used, historic values below this level are rounded to zero						
Montpelier	**0.21**	**---**	**3.84**	**---**	**4.0**	Dead + Active

Interpreting Water Supply Forecasts

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

90 Percent Chance of Exceedance Forecast. There is a 90 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 10 percent chance that the actual streamflow volume will be less than this forecast value.

70 Percent Chance of Exceedance Forecast. There is a 70 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 30 percent chance that the actual streamflow volume will be less than this forecast value.

50 Percent Chance of Exceedance Forecast. There is a 50 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 50 percent chance that the actual streamflow volume will be less than this forecast value. Generally, this forecast is the middle of the range of possible streamflow volumes that can be produced given current conditions.

30 Percent Chance of Exceedance Forecast. There is a 30 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 70 percent chance that the actual streamflow volume will be less than this forecast value.

10 Percent Chance of Exceedance Forecast. There is a 10 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 90 percent chance that the actual streamflow volume will be less than this forecast value.

*Note: There is still a 20 percent chance that actual streamflow volumes will fall either below the 90 percent exceedance forecast or above the 10 percent exceedance forecast.

These forecasts represent the uncertainty inherent in making streamflow predictions. This uncertainty may include sources such as: unknown future weather conditions, uncertainties associated with the various prediction methodologies, and the spatial coverage of the data network in a given basin.

30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year average streamflow.

AF - Acre-feet, forecasted volume of water are typically in thousands of acre-feet (KAF).

These forecasts are given to users to help make risk-based decisions. Users can select the forecast corresponding to the level of risk they are willing to accept in order to minimize the negative impacts of having more or less water than planned for.

To Decrease the Chance of Having Less Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive less than this amount). To reduce the risk of having less water than planned for, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded such as the 90 or 70 percent exceedance forecasts.

To Decrease the Chance of Having More Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive more than this amount). To reduce the risk of having more water than planned for, users can base their operational decisions on one of the forecasts with a lesser chance of being exceeded such as the 30 or 10 percent exceedance forecasts.

Forecast use example:

Using the 50 Percent Exceedance Forecast. Using the example forecasts shown on the next page, there is a 50% chance that actual streamflow volume at the Henry's Fork near Ashton will be less than 280 KAF between June 1 and Sept. 30. There is also a 50% chance that actual streamflow volume will be greater than 280 KAF.

Using the 90 and 70 Percent Exceedance Forecasts. If an unexpected shortage of water could cause problems (such as irrigated agriculture), users might want to plan on receiving 245 KAF during Jun 1 through September 30 (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 245 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 198 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 198 KAF.

Using the 30 or 10 Percent Exceedance Forecasts. If an unexpected excess of water could cause problems (such as operating a flood control reservoir), users might plan on receiving 315 KAF between June 1 and Sept. 30 (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 315 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 360 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 360 KAF. Users could also choose a volume in between any of these values to reflect their desired risk level.

Upper Snake River Basin Streamflow Forecasts - June 1, 2015

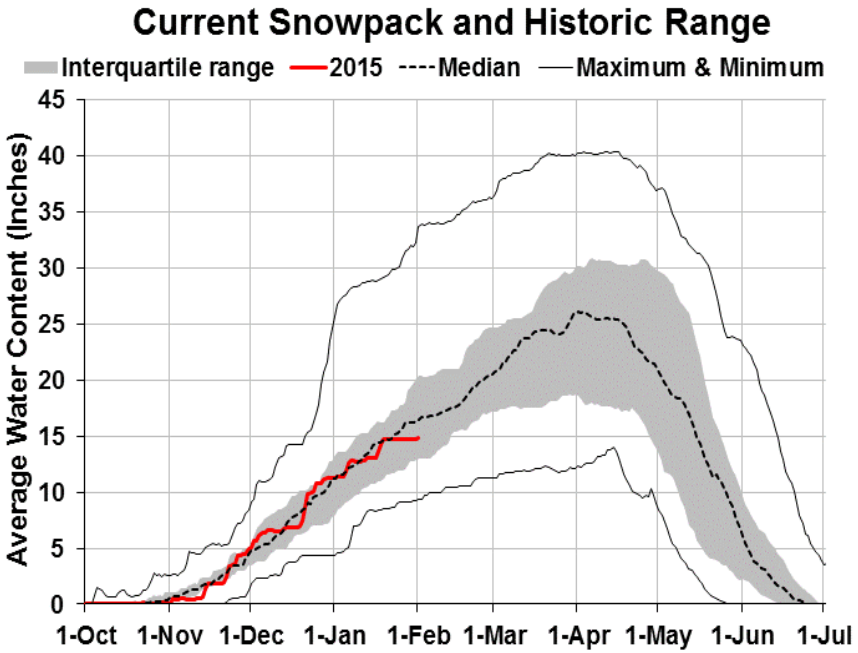
Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <---Drier----------Projected Volume----------Wetter---> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton	JUN-JUL	72	106	129	56	152	186	230
	JUN-SEP	198	245	280	68	315	360	410

Interpreting Snowpack Plots

Basin snowpack plots represent snow water equivalent indices using the average daily SNOTEL data[1] from several sites in or near individual basins. The solid red line (2015), which represents the current water year snowpack water content, can be compared to the normal dashed black line (Median) which is considered "normal", as well as the SNOTEL observed historical snowpack range for each basin. This allows users to gather important information about the current year's snowpack as well as the historical variability of snowpack in each basin.

The gray shaded area represents the interquartile range (also known as the "middle fifty"), which is the 25th to 75th percentiles of the historical daily snowpack data for each basin. Percentiles depict the value of the average snowpack below which the given percent of historical years fall. For example, the top part of the interquartile range (75th percentile) indicates that the snowpack index has been below this line for 75 percent of the period of record, whereas the reverse is true for the lower part of the interquartile range (25th percentile). This means 50 percent of the time the snowpack index is within the interquartile range (gray area) during the period of record.

[1] All data used for these plots come from daily SNOTEL data only and does not include snow course data (collected monthly), whereas the official basin snowpack percent of normal includes both SNOTEL and snow course data, potentially leading to slight discrepancies between plots and official basin percent of normal.



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USDA Natural Resources Conservation Service
9173 West Barnes Drive, Suite C
Boise ID 83709-1574

OFFICIAL BUSINESS

Issued by
Jason Weller, Chief
Natural Resources Conservation Service
Washington, DC

Released by
Curtis Elke, State Conservationist
Shawn Nield, State Soil Scientist
Natural Resources Conservation Service
Boise, Idaho

Prepared by
Idaho Snow Survey Staff
Ron Abramovich, Water Supply Specialist
Philip Morrisey, Data Collection Officer
Ivan Geroy, Hydrologist
Danny Tappa, Hydrologist
Alex Rebentisch, Electronics Technician

Forecasts and Assistance provided by
Rashawn Tama, Forecast Hydrologist
Jolyne Lea, Forecast Hydrologist
NRCS, National Water and Climate Center, Portland, Oregon

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