USDA United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report

February 1, 2018

Cobb Peak (top left) of the Pioneer Mountains, January 28, 2017.
Photo courtesy of Danny Tappa (NRCS-Idaho Snow Survey)

Four skiers (circled in red) enjoy the spectacular scenery of the Pioneer Mountains in central Idaho, and some decent skiing, too! This rugged range provides a significant portion of the snow and eventual streamflow for the Big Lost, Big Wood, and Little Wood rivers. Two storms to end January brought some much needed snow to these mountains, however, area SNOTEL sites are still reporting only 65 to 75% of normal snow conditions. For normal streamflow volume during the runoff season (spring and summer), more frequent and stronger storms are needed. The same can be said for nearly all basins across the southern half of Idaho.

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, 2018

SUMMARY

A winter like this one is what makes Idaho unique and interesting. Summarizing snow conditions and forecasting streamflow from Idaho's southern high desert streams to the maritime climate in northern Idaho can be difficult.

This year's La Nina weather pattern continues to bring moisture to the basins north of the Salmon River while central and southern Idaho have been drier than normal. The Clearwater basin and mountains along the Montana border to the Snake River headwaters of Yellowstone National Park in Wyoming are benefitting from the predominant storm track with a near normal or better snowpack, while the Owyhee basin hosts the lowest snowpack at 34% of normal.

The good news for Idaho's irrigators continues to be reservoir carryover storage from last year's abundant runoff as well as above normal winter streamflow that is still filling reservoirs. It will be interesting to see the influence of elevated baseflows on streamflow runoff and timing in the early part of the runoff season. More snow is needed to mitigate the impacts of the developing snow drought across southern Idaho, to improve the winter recreation season, and to help sustain flows in the later summer months. Streamflow forecasts did not change much from last month and continue to range from a low of 35% of average in the Owyhee basin to 115% in the headwaters streams of the Snake River in Wyoming and the Clearwater basin. Most reservoir operators are in a wait-and-see mode about releasing water. The Surface Water Supply Indexes (SWSI) indicates supplies may be marginal in the Big Wood, Big Lost and Little Lost basins. Elsewhere, there is plenty of water in the reservoirs that will help provide an adequate irrigation supply in the Boise, Upper Snake, Bear, Oakley, Salmon Falls and Owyhee basins. However, more snow or a wet spring would help reduce the risk Idaho farmers take every year when betting on the weather.

SNOWPACK

Idaho's snowpack is similar to a month ago with the highest percentages in the Panhandle, the basins bordering Montana and along the Continental Divide. Snowpacks are 110% of normal in the Clearwater basin as a whole, 119% in the Lemhi basin, and 120% in Pacific Creek and Buffalo Fork in the Upper Snake in Wyoming. The lowest snowpacks are in the lower elevation watersheds in southern Idaho with the Owyhee basin at only 34% of normal. Other basins not faring much better are 40 to 60% of normal and include: the Weiser, Mann, both Camas Creeks (Fairfield and near Birch Creek), Fish Creek, Little Wood, Salmon Falls, Bruneau, and Reynolds Creek. As a whole river basin, the Salmon is near normal, the Payette is 77%, Boise is 64%, Big Wood is 67%, Snake above Palisades is 107%, and the Snake above American Falls is 96%. The snowpack is 64% of normal in Oakley, and 82% in the Bear River. More snow is needed across central and southern Idaho and colder temperatures would help to keep the snow in place until spring arrives.

PRECIPITATION

January precipitation pattern across the state mirrored the patterns seen in October and December with greater amounts in the Panhandle, north central, along the continental divide and Upper Snake in Wyoming. Highest January amounts were 132% of normal in the Northern Panhandle Regions,

decreasing to 114% in the Spokane basin and 101% in the Clearwater basin. The Henrys Fork and Teton basin were on the cusp of the dominant pattern and received 111% of normal, while normal amounts fell in the Snake basin above Palisades Reservoir. January precipitation was 95 to 99% of normal in the Salmon and West Central mountains and was 70 to 95% in the Big Wood to Mud Lake region. Amounts across southern and eastern Idaho were 65 to 75% of normal.

This was nearly the same precipitation pattern observed in October and December as a result of the jet stream streaking across northern Idaho and then dipping along the continental divide and into Montana. Locations in the path received abundant snowfall, especially in Idaho's Panhandle Region the last week of January. This pattern is continuing into early February and a strong high pressure ridge over the eastern Pacific Ocean brought warm temperatures and rain was reported at 8,500 feet in the Sawtooths and over Teton Pass, 7,740 feet. This precipitation pattern and unseasonably warm temperatures are expected to continue into mid-February with more moisture to the north of the Salmon River and less to the south.

Water year-to-date totals also illustrate this pattern with the Panhandle Region, Spokane and Clearwater basins at about 112% of normal and amounts decreasing to 90 to 100% of normal in the Salmon, Big Lost, Henrys Fork and Upper Snake in Wyoming. Elsewhere in the state, precipitation since October 1 ranges from 75 to 85% of normal.

RESERVOIRS

Reservoir storage across southern Idaho remains one of the bright spots for Idaho's irrigators this year. This water is like money in the bank and is helping to nearly guarantee an adequate irrigation supply for southern Idaho irrigators even with a snowpack that currently ranges from 35% of normal in the Owyhee basin to 115% in the Upper Snake basin in Wyoming. Here is a reservoir snapshot from north to south: Lake Pend Oreille, Priest Lake and Dworshak Reservoir are at 50 to 68% full with plenty of mountain snow in their watersheds. Lake Coeur d'Alene had its first major runoff event of the year and increased to 141% of average, or 57% full.

The Payette reservoir system is 122% of average, 78% full, while the Boise system is 145% of average, 76% full. Lake Lowell is 127% of average, 72% full, while Mann Creek Reservoir is the lowest in the state at 45% of average, 15% full. Central Idaho reservoirs rock with Mackay at 131% of average, 77% full. Little Wood and Magic are both 84% full, and 154% and 232% of average, respectively. Little Wood Reservoir will likely start releasing water later this month.

In the Upper Snake, Palisades Reservoir leads in storage at 97% full, 148% of average. Jackson Lake is 78% full, 152% of average; combined these two are 89% full, 150% of average which is the second highest January 31 storage level since Palisades was built in 1955; January 31, 1996, had 33,000 acre-feet more in storage. Ririe Reservoir is 58% full, 122% of average, Blackfoot Reservoir is 81% full, 154% of average while American Falls Reservoir is 86% full, 129% of average and releasing 7,200 cfs.

Southern Idaho reservoirs range from 142% of average for Owyhee Reservoir to 217% of average for Salmon Falls Reservoir. Oakley and Salmon Falls reservoirs are about half full while Lake Owyhee and Brownlee reservoirs are about 70% full. Bear Lake and Montpelier reservoirs are 78% full, which is about 175% of average.

Most reservoir operators are using a wait-and-see approach for releasing water. Many irrigators are happy with nearly full reservoirs that make an adequate irrigation season likely even with below

normal snow levels. Additional mountain snow, though, would provide higher river flows in the latter half of summer and help to improve reservoir carryover storage for 2019.

STREAMFLOW

The other bright spot in this year's water supply are the current streamflow levels across the state. Some streams have been flowing above average for a year, since last February 2017's rain-on-snow event. Even the Big Lost River is still feeding Mackay Reservoir and making its way through the towns of Moore and Arco on its way to the Lost River sinks. Often in January, streams slow up or freeze because of colder temperatures, but not this year because of warm winter temperatures and greater stream velocity. These high flows were observed January 31 while measuring the snow at Mores Creek Summit near Idaho City and the little creek, which is barely an ephemeral creek, was still flowing under the 50 inches of snow measured. Similar conditions have been observed elsewhere across the state as the water continues to drain out of the mountains from last year's abundant snowfall and rain events.

Higher than normal baseflow could be the wild card in forecasting this spring's streamflow. If snowfall remains below normal across southern Idaho, above normal baseflow could help compensate for below normal spring snowmelt runoff conditions. In contrast to those areas with below normal snowpack, northern Idaho and the Upper Snake in Wyoming currently have near to above normal snowpacks, so elevated baseflows may provide an even bigger bonus to the predicted runoff volumes. Streamflow graphs on this page reflect these above baseflows: Peak Streamflow Information

This is a good year to investigate what has happened in your basin to better understand hydrologic conditions. Here are a few more links to analysis tools and products to help:

- Historical Snow Indexes and Snow Graphs for Idaho Basins - to find similar snow years.
- Soil Moisture & Temperature Graphs - Soil moisture appears to be primed from last year's snow and fall moisture.
- Surface Water Supply Index (SWSI) - Tables and graphs which include all five streamflow exceedance forecasts and thresholds to illustrate where surface agricultural shortages occur.
- Streamflow Forecasts - Daily Water Supply Forecasts (DWSF) keep water users aware of the changing conditions between the 1st of month forecasts that are published in these monthly reports.

The DWSFs only use SNOTEL snow water equivalent and precipitation data to forecast summer streamflow volumes. For those old timers that remember when Soil Conservation Service (SCS previous name for NRCS) installed SNOTEL sites in the late 1970s and early 1980s, one of the reasons to do this was to eliminate the element of surprise when conditions change between the 1st of month snow measurements; February 2017 is an excellent example. These DWSFs help to eliminate this element of surprise and are used in many different ways such as flood and drought mitigation, cloud seeding suspension, and to assist in aquifer recharge.

The SWSIs are very useful and allow water users to look at all five exceedance forecasts which include a range of possibilities that may happen depending upon dry or wet future conditions, and inherent forecast uncertainty. With the increase in climate variability, users should consider using the full range of exceedance forecasts based on what they learned during their hydrologic investigation and their risk level. This year, southern Idaho users may wish to use the 70%, 50% and 30% chance of exceedance forecasts in their planning scenarios because of high baseflow but low snow levels.

Northern Idaho or Upper Snake water users may wish to use the wetter volume forecasts, 50%, 30% and 10% chance of exceedance forecasts because of the good baseflows, average or better snowpacks, and potential for the current storm track pattern to continue across this region.

As a whole, current Idaho streamflow forecasts did not change much from last month and continue to range from a low of 30% of average in the Owyhee basin to 115% in the headwaters streams of the Snake River in Wyoming and Clearwater basin.

Note: No comments were received about discontinuing the Portneuf River at Topaz streamflow forecast, so this point will be discontinued until additional diversion or reservoir storage data becomes available.

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

The highest snow in Idaho and the drainages that flow into our great state are in the Idaho Panhandle at 100% to 120% of median, and eastern Idaho and the Upper Snake in Wyoming / Yellowstone National Park at 115%. Montana still hosts the best snow in the West and 150% of median in the Yellowstone River flowing north out of Yellowstone National Park and around the Bozeman/Gallatin Valley.

More snow is needed across southern Idaho to mitigate the impacts of the snow drought that is developing and bring more smiles to winter recreationists.

Avalanche conditions vary across the state because of variable winter weather – intense snow storms, rain, warm temperatures, and extended dry and warm spells. Also, be careful crossing creeks as many are flowing above normal and are not frozen. As a result, there are fewer snow bridges to cross the creeks and steep trenches dropping into the creeks. A good example is Pine Creek flowing on the back side of Bogus Basin Recreation Area that is usually frozen or hardly flowing during the winter, but flowing this year along with springs and seeps elsewhere on the mountain.

For the desert river runners, your guess is probably as good as ours when the Owyhee is going to kick in and for how long and how high, but don't expect an extended season like last year with a snowpack that is only 34% of normal. Be careful and play it safe whether recreating on the frozen snow or Idaho high desert rivers as we wait to see what Mother Nature delivers us the rest of this winter and spring.

WESTERN SNOW CONFERENCE

Registration is open. Please join us April 16-19, 2018 for the 86th annual Western Snow Conference in Albuquerque, N.M. The conference venue offers the opportunity to interact with other professionals while enjoying the unique ambience of the desert Southwest http://www.westernsnowconference.org/

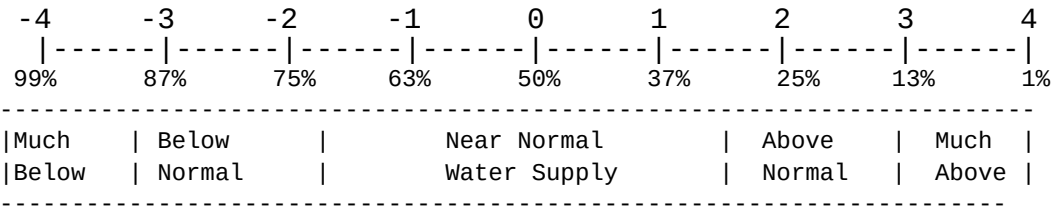
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) February 1, 2018

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.

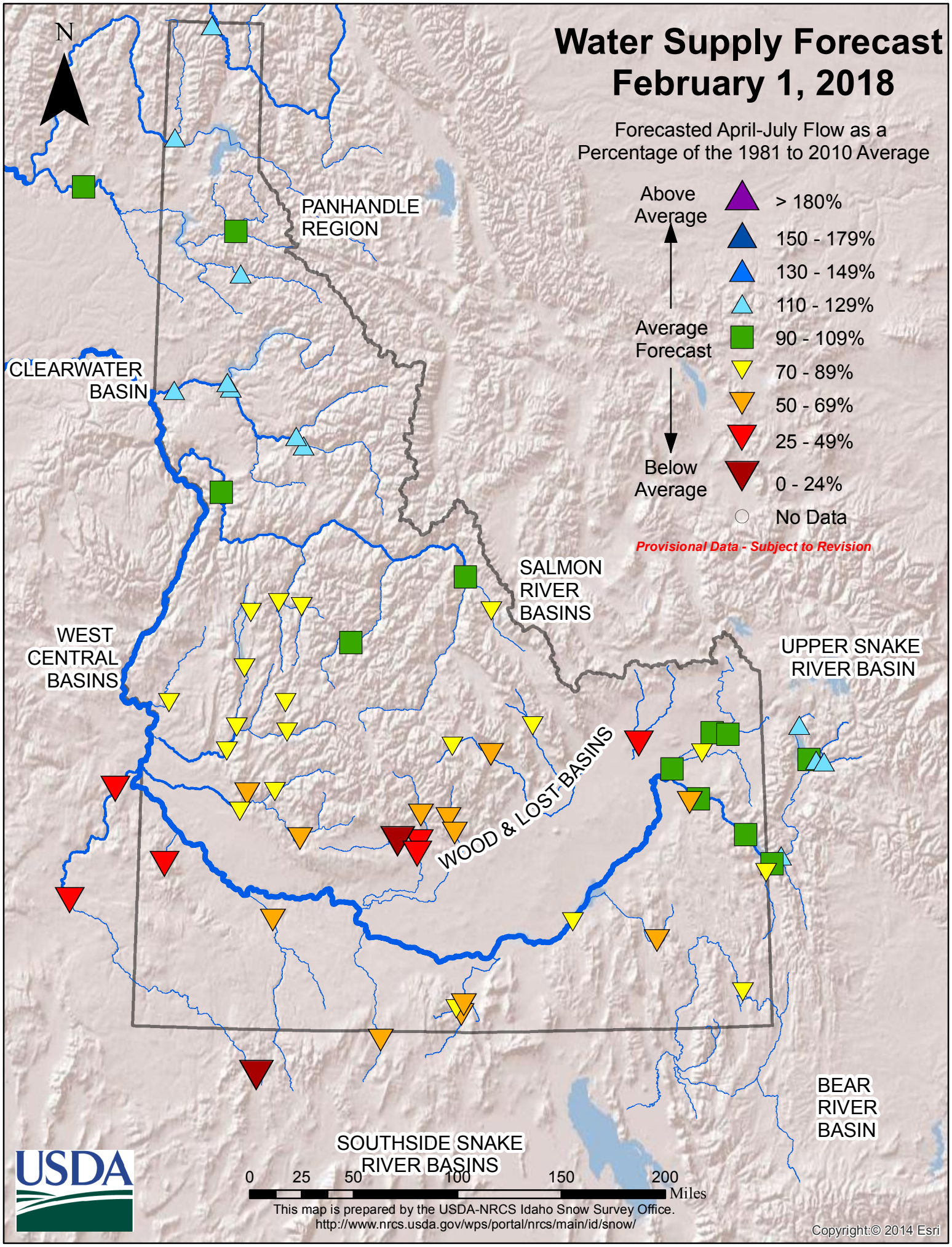
SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for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

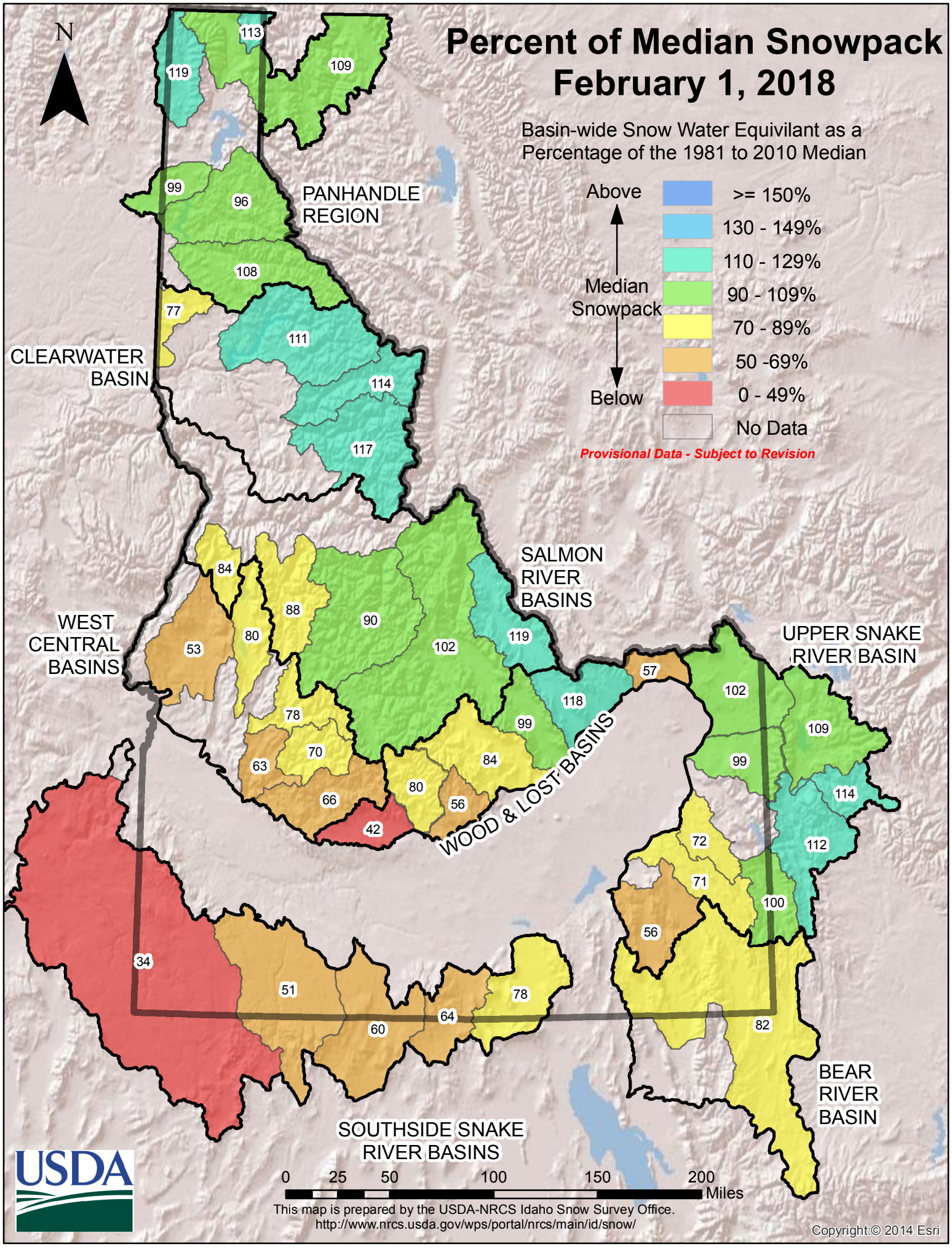
BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	**-0.1**	**2017**	**NA**
Clearwater	**1.9**	**2012**	**NA**
Salmon	**-0.1**	**2010**	**NA**
Weiser	**-1.6**	**2014**	**NA**
Payette	**-1.2**	**2016**	**NA**
Boise	**-0.3**	**2016**	**-1.5**
Big Wood	**0.7**	**2000**	**0.7**
Big Wood above Hailey	**-1.2**	**2014**	**NA**
Little Wood	**-0.5**	**2016**	**-1.3**
Big Lost	**-0.3**	**2016**	**0.7**
Little Lost	**0.1**	**2012**	**1.3**
Teton	**-0.8**	**2015**	**-3.9**
Henrys Fork	**1.0**	**2012**	**-1.5**
Snake (Heise)	**1.7**	**2009**	**-1.8**
Oakley	**1.2**	**2000**	**0.4**
Salmon Falls	**1.6**	**1995**	**-0.9**
Bruneau	**-1.2**	**2003**	**NA**
Owyhee	**-0.1**	**2012**	**-2.6**
Bear River	**2.3**	**2011**	**-3.7**

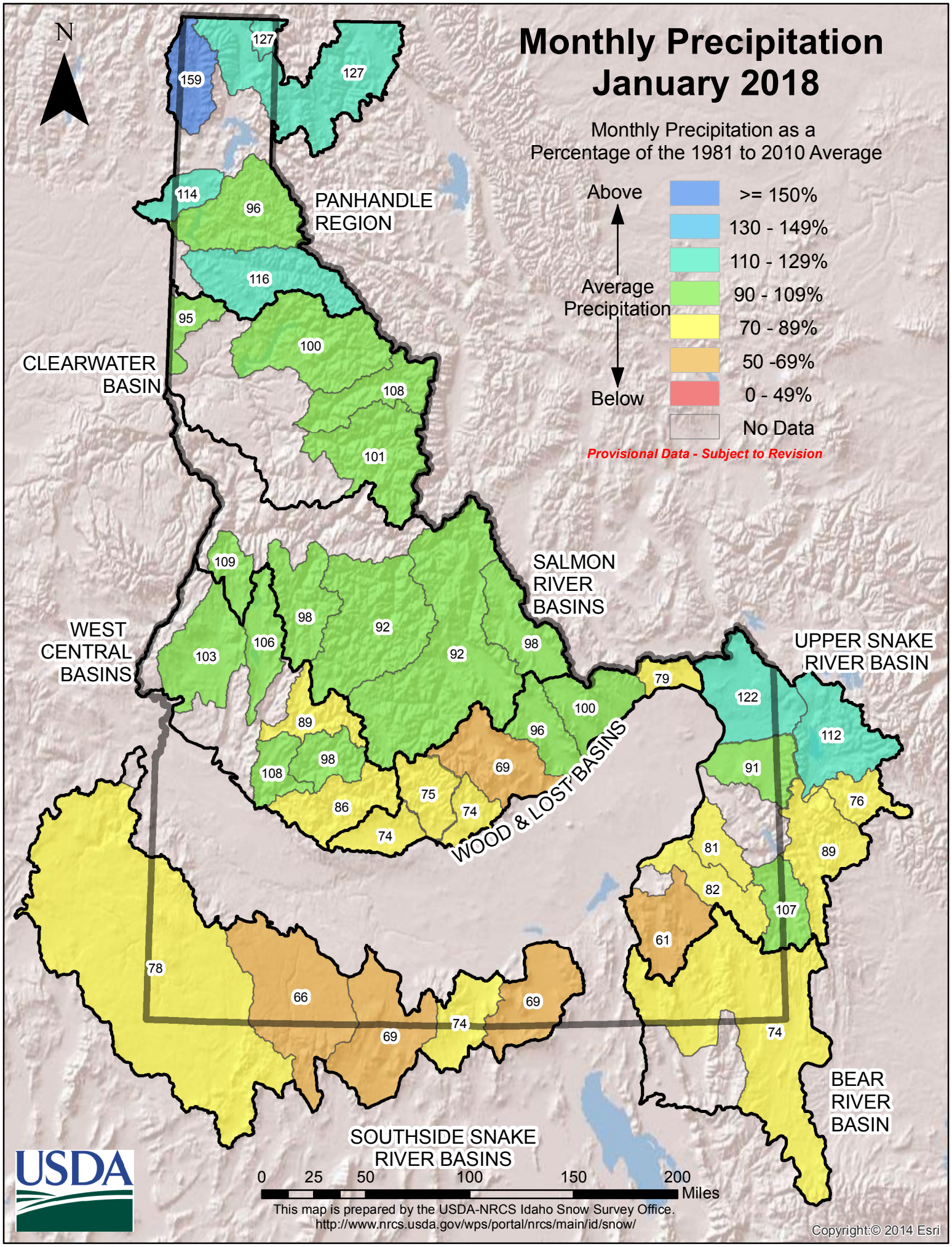
SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION

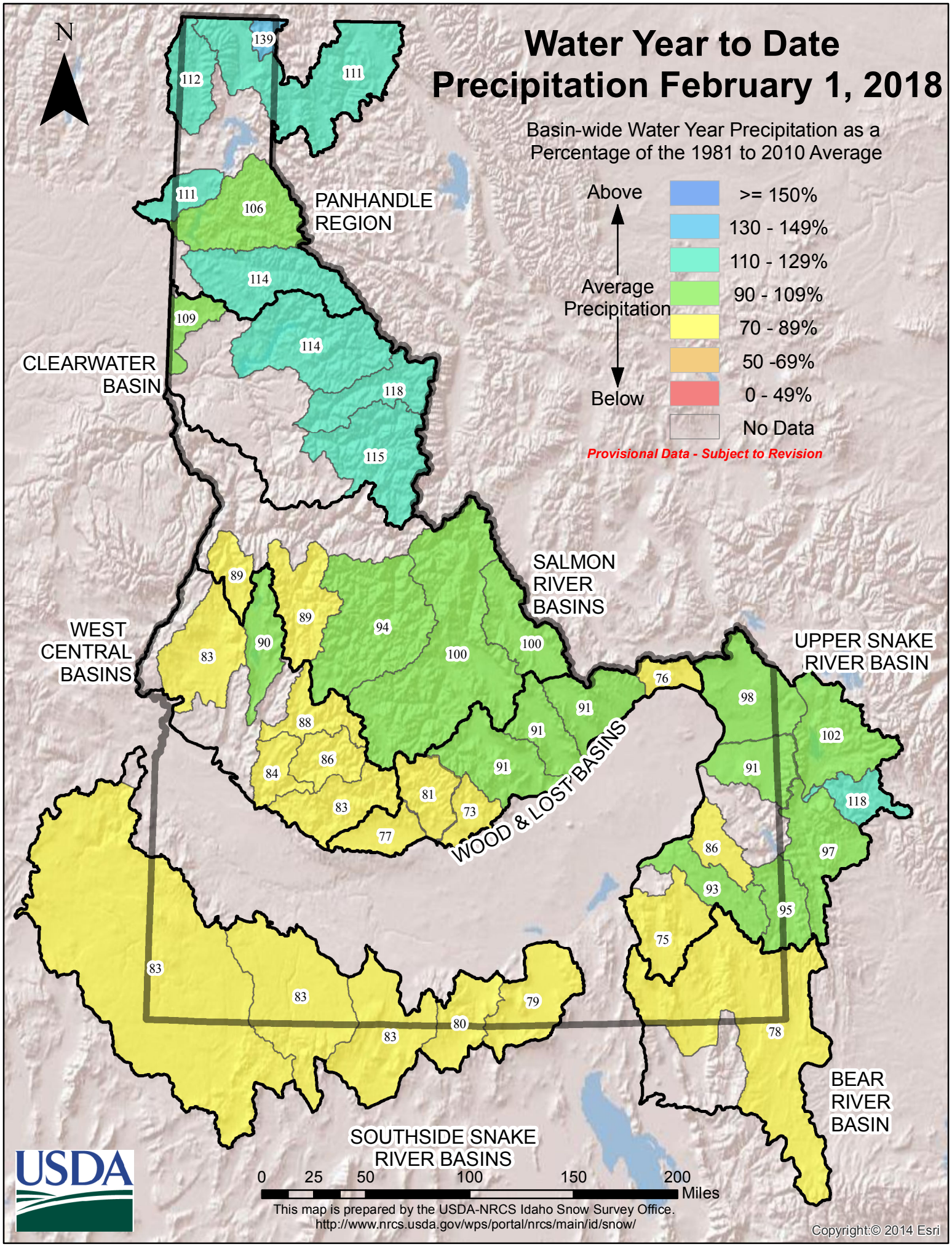


NA=Not Available / Not Applicable; Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater 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.


N
Water Supply Forecast
February 1, 2018
Forecasted April-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.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/
Copyright:© 2014 Esri

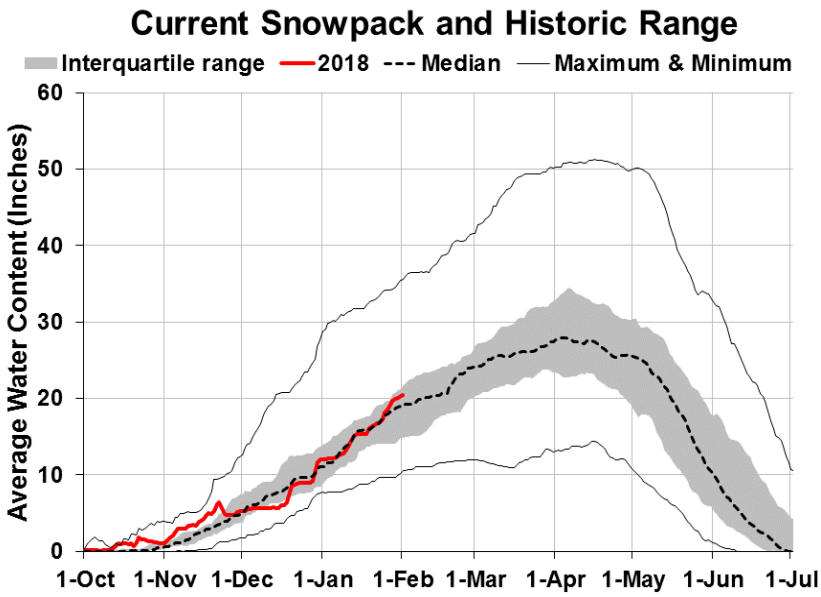

Percent of Median Snowpack
February 1, 2018
Basin-wide Snow Water Equivilant as a Percentage of the 1981 to 2010 Median
Above
Median Snowpack
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
113
119
109
99
96
108
77
111
114
117
84
88
90
102
119
53
80
57
102
118
78
99
109
70
63
84
99
114
66
80
56
112
42
72
71
100
56
34
51
78
64
60
82
0 25 50 100 150 200
Miles
USDA
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/
Copyright:© 2014 Esri

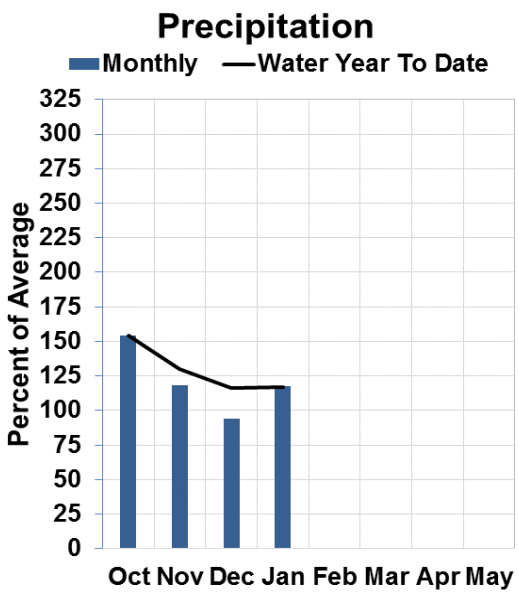

N
Monthly Precipitation
January 2018
Monthly Precipitation as a
Percentage of the 1981 to 2010 Average
Above
Average
Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
PANHANDLE
REGION
CLEARWATER
BASIN
SALMON
RIVER
BASINS
WEST
CENTRAL
BASINS
UPPER SNAKE
RIVER BASIN
WOOD & LOST BASINS
BEAR
RIVER
BASIN
SOUTHSIDE SNAKE
RIVER BASINS
127
127
159
114
96
116
95
100
108
101
109
98
92
106
103
92
98
89
98
108
69
75
74
86
74
100
96
79
122
112
91
76
81
89
82
107
61
78
66
69
74
69
74
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/
USDA
Copyright:© 2014 Esri


N
Water Year to Date
Precipitation February 1, 2018
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
139
112
111
111
106
114
109
114
118
115
89
89
90
83
94
100
100
76
98
91
91
102
88
86
84
91
91
118
81
73
83
77
86
97
93
95
75
83
83
79
80
83
78
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/
USDA
Copyright© 2014 Esri

Panhandle Region

February 1, 2018





WATER SUPPLY OUTLOOK

After a quiet first week of January, a steady series of storms rolled through the Panhandle Region. January precipitation totals in the Panhandle were over double those of January 2017! These storms left most basins in the Panhandle Region with an overall near normal or above normal February 1 snowpack. However, the snowpack at some lower elevation sites is below normal after a warmer than average January.

As a whole, reservoirs in the Panhandle Region are at 112% of average capacity. Near average April-July and April-September streamflows are forecasted for the NF Coeur d'Alene and Spokane rivers. Above average streamflows are expected for all other forecast points in the region, ranging from 110% of average for the St. Joe River to 125% for Boundary Creek.

Panhandle Region Streamflow Forecasts - February 1, 2018

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	295	360	405	108%	450	515	375
	APR-SEP	305	375	420	109%	465	535	385
Kootenai R at Leonia 1 & 2	This forecast is not available this month.							
Boundary Ck nr Porthill	APR-JUL	117	134	146	125%	158	175	117
	APR-SEP	124	141	153	124%	165	182	123
Clark Fork R at Whitehorse Rapids 1 & 2	This forecast is not available this month.							
Pend Oreille Lake Inflow 2	This forecast is not available this month.							
Priest R nr Priest River 2	APR-JUL	690	790	855	110%	920	1020	780
	APR-SEP	730	835	910	110%	980	1090	830
NF Coeur dAlene R at Enaville	APR-JUL	465	595	685	98%	770	900	700
	APR-SEP	500	630	720	97%	805	935	740
St. Joe R at Calder 2	APR-JUL	940	1070	1160	110%	1240	1370	1050
	APR-SEP	1000	1130	1220	109%	1310	1440	1120
Spokane R nr Post Falls 2	APR-JUL	1860	2230	2480	104%	2730	3100	2390
	APR-SEP	1940	2310	2560	103%	2810	3170	2480
Spokane R at Long Lake	APR-JUL	2090	2500	2780	106%	3050	3460	2620
	APR-SEP	2290	2710	2990	105%	3270	3680	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

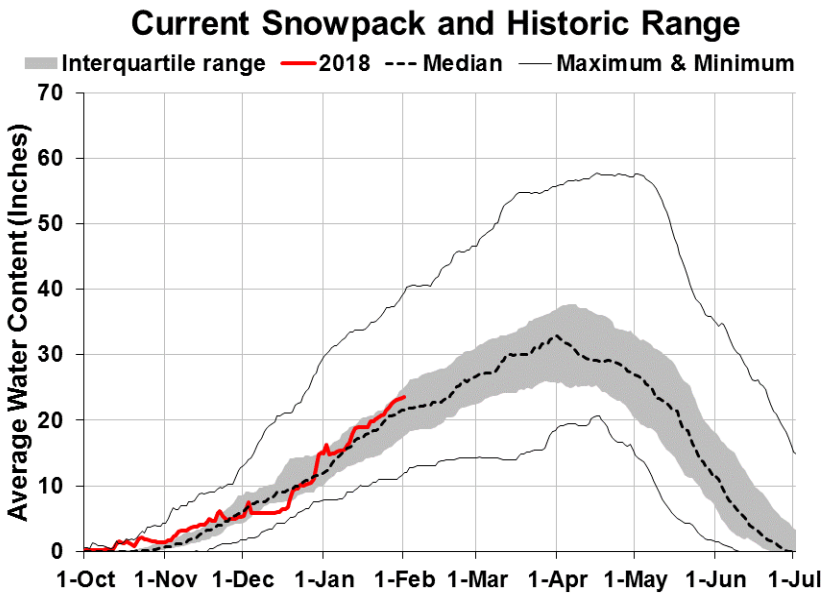
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	2940.4	3021.5	2375.0	3451.0
Flathead Lake	858.2	925.5	955.6	1791.0
Noxon Rapids Reservoir	301.4	321.0	315.0	335.0
Lake Pend Oreille	788.7	589.1	753.9	1561.3
Priest Lake	55.6	45.6	56.7	119.3
Lake Coeur d' Alene	135.6	46.3	96.3	238.5

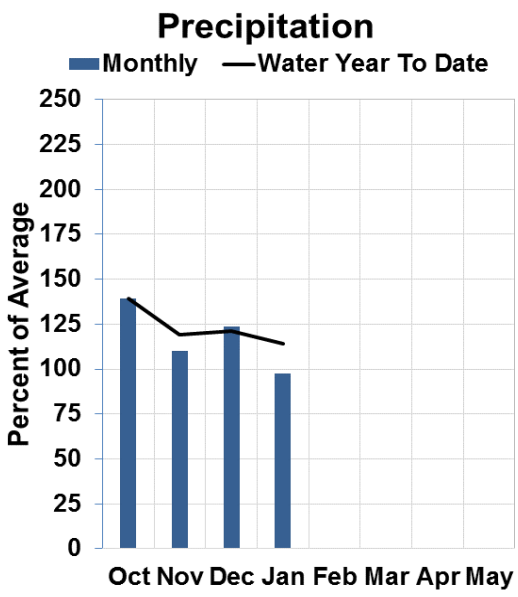
Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	2017
Moyie River	6	113%	72%
Priest River	5	119%	67%
Rathdrum Creek	4	89%	76%
Coeur d' Alene River	6	96%	63%
St. Joe River	4	108%	74%
Spokane River	14	99%	70%
Palouse River	2	77%	101%
Kootenai ab Bonners Ferry	17	109%	68%

Clearwater River Basin

February 1, 2018





WATER SUPPLY OUTLOOK

Average January precipitation across most of the Clearwater basin kept the water-year-to-date precipitation totals well above normal. A steady series of storms last month left the region with an overall healthy February 1 snowpack, at 110% of normal snow water equivalent. While higher elevation sites in the Clearwater have managed to retain an above-normal snowpack despite a warmer than average January, some lower elevations are seeing a thinner snowpack than is typical for this time of year because of the warmer temperatures.

Dworshak Reservoir is right at normal capacity for this time of year. April-July and April-September streamflow forecasts are for about 115% of average for all rivers in the Clearwater Basin. With slightly above average runoff volumes predicted, water supplies should be adequate and provide an excellent runoff season for the river runners to enjoy.

Clearwater River Basin Streamflow Forecasts - February 1, 2018

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	1820	2050	2210	115%	2370	2600	1920
	APR-SEP	1920	2160	2320	115%	2480	2720	2020
Lochsa R nr Lowell	APR-JUL	1300	1470	1590	113%	1700	1870	1410
	APR-SEP	1370	1550	1660	112%	1780	1950	1480
Dworshak Reservoir Inflow 2	APR-JUL	2220	2540	2750	114%	2970	3290	2410
	APR-SEP	2380	2700	2920	114%	3140	3460	2570
Clearwater R at Orofino	APR-JUL	3970	4570	4980	116%	5380	5980	4310
	APR-SEP	4200	4810	5230	115%	5650	6260	4540
Clearwater R at Spalding 2	APR-JUL	6410	7340	7970	116%	8600	9530	6890
	APR-SEP	6790	7740	8390	115%	9030	9980	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%

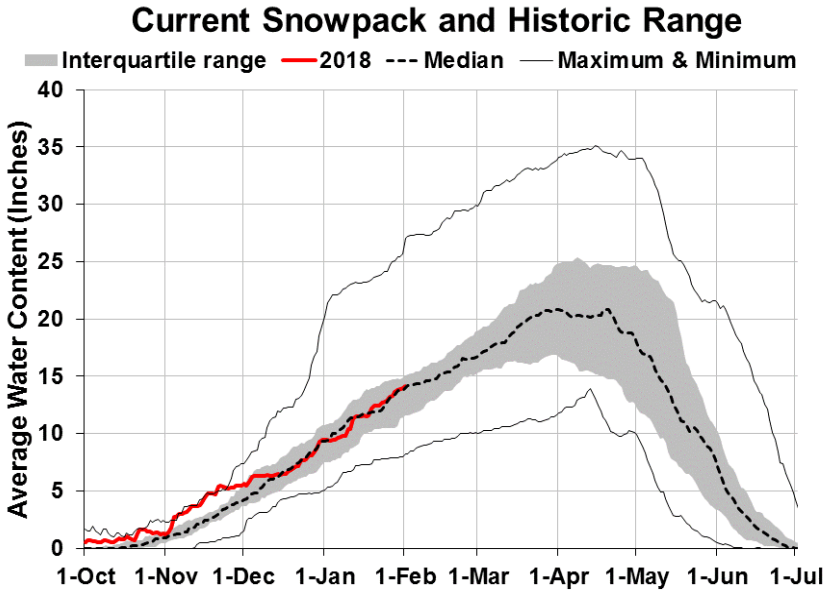
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

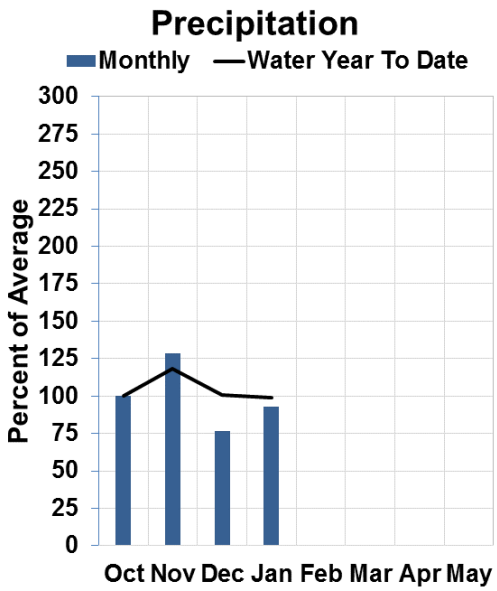
Reservoir Storage (KAF): End of January				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	2359.0	2297.8	2335.0	3468.0

Watershed Snowpack Analysis: February 1, 2018			
Basin Name	# of Sites	% of Median 2018	2017
NF Clearwater River	8	111%	76%
Lochsa River	3	114%	79%
Selway River	4	117%	81%
Clearwater Basin Total	17	110%	80%

Salmon River Basin

February 1, 2018





WATER SUPPLY OUTLOOK

In the January 1 report, we pointed out historical snowpack consistency in the Salmon River drainage. This was manifested throughout January, resulting in snow conditions ending the month at 100% of normal. In fact, the red (2018) and dashed line (normal) on the snowpack chart above demonstrate 2018 conditions have been hovering near normal since mid-December. As a whole, January precipitation was slightly below normal and water year to date precipitation is, unsurprisingly, about 100% of normal. Based on NOAA Climate Prediction Center's 6-10 and 8-14 day outlooks, the first half of February looks likely to be warmer and drier than normal. Therefore, in order to maintain normal snowpack by March 1, the second half of February will likely need to be wetter than normal.

Streamflow volumes are still expected to be near normal for the spring and summer runoff season. Throughout the Salmon River drainage, we have observed above normal streamflow to end 2017 and begin 2018. In fact, water year-to-date (Oct 1 – Feb 1) observed flow at the Salmon River at Salmon gauge is the 2nd highest on record dating back to 1916, while the Salmon River at White Bird is the 6th highest on record dating back to 1912 for the same Oct 1 – Feb 1 period. For the river runners who entered the lottery for the Middle Fork and Main Salmon runs, near normal flows are forecast but you should reference future monthly Water Supply Outlook Reports for a clearer outlook as conditions change. If warmer than normal temperatures continue, we can expect earlier than normal streamflow peaks for the world famous whitewater in the Salmon River basin.

Salmon River Streamflow Forecasts - February 1, 2018

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	455	620	735	95%	845	1010	775
	APR-SEP	530	720	850	94%	980	1170	900
Lemhi R nr Lemhi	APR-JUL	34	53	65	88%	78	96	74
	APR-SEP	48	69	83	92%	97	118	90
MF Salmon R at MF Lodge	APR-JUL	425	595	715	104%	830	1000	690
	APR-SEP	485	670	790	103%	915	1100	770
Sf Salmon R nr Krassel Ranger Station	APR-JUL	140	195	230	85%	270	325	270
	APR-SEP	153	210	250	86%	290	345	290
Johnson Ck at Yellow Pine Id	APR-JUL	107	143	168	88%	193	230	191
	APR-SEP	114	153	179	87%	205	245	205
Salmon R at White Bird	APR-JUL	3630	4680	5390	100%	6110	7160	5370
	APR-SEP	4040	5180	5950	100%	6720	7860	5940

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

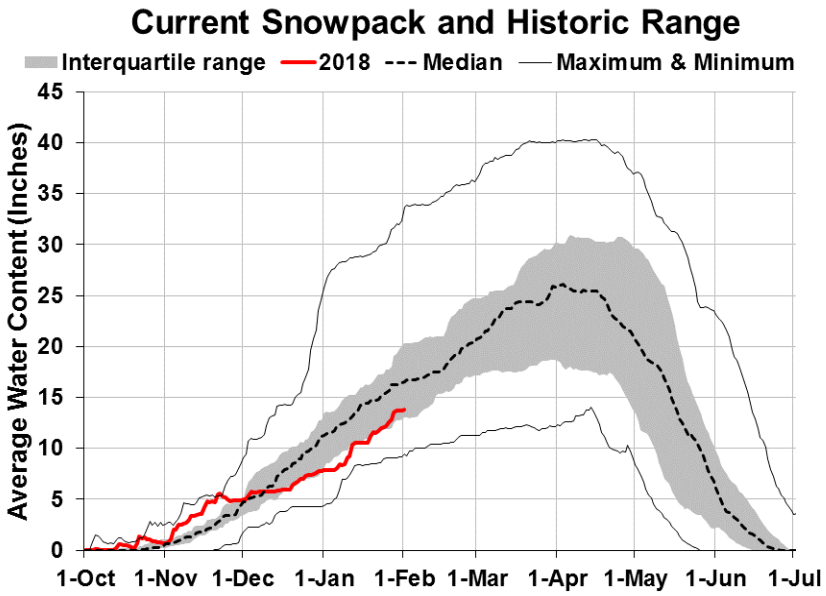
1) 90% and 10% exceedance probabilities are actually 95% and 5%

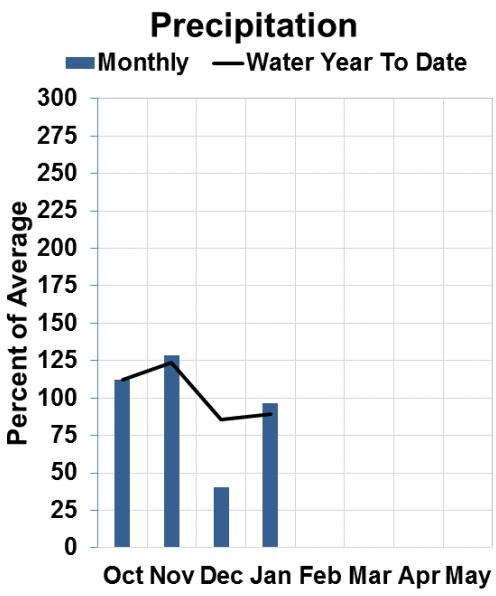
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Watershed Snowpack Analysis: February 1, 2018 Basin Name	# of Sites	% of Median 2018	2017
Salmon River ab Salmon	7	102%	118%
Lemhi River	7	119%	104%
MF Salmon River	3	90%	100%
SF Salmon River	3	88%	86%
Little Salmon River	4	84%	84%
Salmon Basin Total	24	100%	96%

West Central Basins

February 1, 2018





WATER SUPPLY OUTLOOK

In January, precipitation rebounded to near normal in the Boise, Payette, and Weiser River drainages. Water year-to-date precipitation is about 90% of normal, and is being held down by the dismal December precipitation. Resulting, snowpack numbers have improved since January 1, with respect to normal. Currently, the Payette is the highest at 77% of normal while Boise and Weiser are 64% and 53%, respectively. Weather forecasts for the first half of February look drier and warmer than normal for these basins, but conditions beyond that is anyone's guess. Normal peak snowpack occurs around April 1, so we can expect to see about two more months of snowpack building before the onset of widespread seasonal melt out. However, if we continue to see much warmer than normal temperatures across the western United States (Idaho was mostly 5-10 degrees F above normal during January), the onset of seasonal melt will be much earlier than April 1.

Reservoir storage continues to track much above average in the West Central basins. Currently, the Payette system (Deadwood & Cascade) is a combined 122% of average (78% capacity), while the Boise system (Anderson Ranch, Arrowrock, and Lucky Peak) is 145% of average (76% capacity). Much less than normal streamflow is needed to provide adequate irrigation supplies for users on these systems because of the good reservoir storage. Streamflow forecasts for the 2018 runoff season are below normal, ranging from 65% to 85% of average across the region.

West Central Basins Streamflow Forecasts - February 1, 2018

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	163	255	320	67%	385	475	475
	APR-SEP	180	280	345	68%	410	510	510
Boise R nr Twin Springs	APR-JUL	300	395	460	79%	525	620	585
	APR-SEP	330	435	505	80%	575	675	635
Mores Ck nr Arrowrock Dam	APR-JUL	35	55	72	63%	90	121	115
	APR-SEP	37	58	75	63%	94	126	119
Boise R nr Boise 2	APR-JUL	525	750	905	72%	1060	1290	1260
	APR-SEP	610	835	990	73%	1140	1370	1360
Lake Fork Payette R nr McCall	APR-JUL	54	63	69	86%	76	87	80
	APR-SEP	55	65	71	86%	79	90	83
NF Payette R at Cascade 2	APR-JUL	280	360	420	87%	475	560	485
	APR-SEP	255	340	400	81%	460	545	495
NF Payette R nr Banks 2	APR-JUL	370	470	540	86%	610	710	625
	APR-SEP	320	430	510	80%	585	695	640
SF Payette R at Lowman	APR-JUL	220	270	310	78%	350	410	400
	APR-SEP	255	310	355	78%	400	470	455
Deadwood Reservoir Inflow 2	APR-JUL	67	86	99	80%	111	130	123
	APR-SEP	71	92	106	81%	120	141	131
Payette R nr Horseshoe Bend 2	APR-JUL	880	1090	1240	84%	1390	1600	1480
	APR-SEP	830	1090	1260	77%	1440	1700	1630
Weiser R nr Weiser	FEB-JUL	220	340	435	71%	545	730	615
	APR-JUL	126	199	255	69%	325	435	370
	APR-SEP	141	220	280	70%	350	465	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

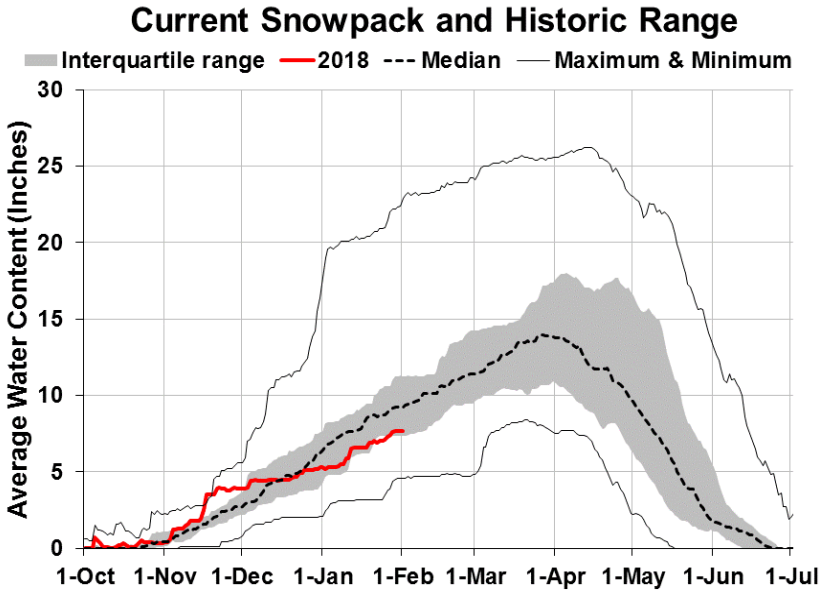
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	360.7	254.3	256.4	450.2
Arrowrock Reservoir	254.5	211.2	174.8	272.2
Lucky Peak Reservoir	160.5	80.7	103.5	293.2
Sub-Basin Total	**775.7**	**546.2**	**534.7**	**1015.6**
Deadwood Reservoir	113.5	95.0	87.9	161.9
Cascade Reservoir	550.3	445.6	455.5	693.2
Sub-Basin Total	**663.7**	**540.7**	**543.4**	**855.1**
Lake Lowell	118.1	98.9	92.8	165.2
Mann Creek Reservoir	1.6	1.1	3.6	11.1

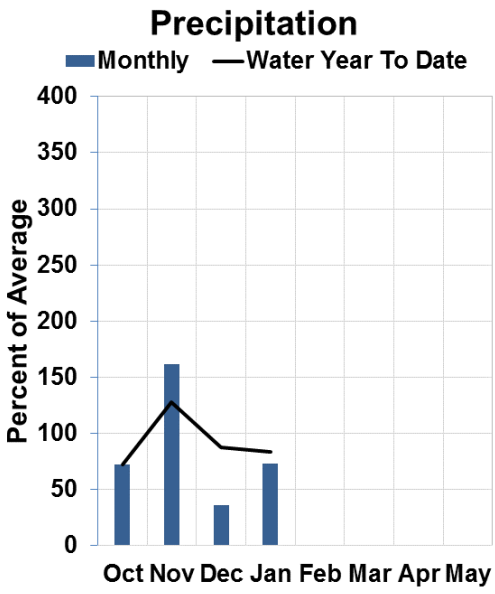
Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	2017
SF Boise River	8	66%	131%
MF & NF Boise Rivers	6	70%	113%
Mores Creek	4	63%	126%
Canyon Creek	4	32%	184%
Boise Basin Total	17	64%	125%
NF Payette River	9	80%	87%
SF Payette River	5	78%	111%
Payette Basin Total	16	77%	98%
Mann Creek	1	58%	94%
Weiser Basin Total	7	53%	125%

Wood & Lost River Basin

February 1, 2018





WATER SUPPLY OUTLOOK

January precipitation rebounded in the Wood and Lost River basins, but was still only about 70% of normal, except for basins farthest to the east (Birch-Medicine Lodge and Little Lost) which were near normal. Many of the January storm tracks that helped basins to the north and west (Salmon, Payette, etc.), resulted in lesser amounts here. It's been well documented in past reports that these basins greatly benefit from southwest storm tracks, which have been nearly non-existent since December. Hyndman SNOTEL site, in the East Fork of the Wood River drainage, has only recorded one significant storm event since mid-November, which was January 8-10.

Reservoir carryover continues to impress after the huge 2017 water year. From highest to lowest, Magic Reservoir is 232% of average (84% full), Little Wood Reservoir is 154% of average (84% full), and Mackay Reservoir is 131% of average (77% full). Streamflow forecasts range from 40 to 90% of average in these basins, with a noticeable increase in expected runoff from west to east. The timing of widespread snowmelt and resultant runoff might be key to provide sufficient irrigation supplies. Earlier than normal runoff could produce irrigation shortages in the Big Wood, Big Lost, and Little Lost basins. It is worth noting that we still have about two months remaining in the normal widespread snow accumulation season, so these water outlooks are subject to change with snowpack conditions. Currently, irrigation water supplies look marginal to adequate for the many water users in the Wood and Lost River basins.

Wood and Lost Basins Streamflow Forecasts - February 1, 2018

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	2.8	8.3	13.7	49%	20	33	28
Little Lost R nr Howe	APR-JUL	15.5	21	25	89%	29	35	28
	APR-SEP	18.2	26	31	91%	36	43	34
Big Lost R at Howell Ranch	APR-JUL	65	94	118	74%	144	187	159
	APR-SEP	73	107	134	74%	163	210	180
Big Lost R bl Mackay Reservoir	APR-JUL	33	58	78	63%	102	143	123
	APR-SEP	47	77	101	67%	129	175	150
Little Wood R ab High Five Ck	MAR-JUL	16	32	45	58%	62	90	77
	MAR-SEP	17.5	35	49	60%	67	97	82
	APR-JUL	11.9	26	39	57%	55	83	69
Little Wood R nr Carey 2	MAR-JUL	15.6	32	46	53%	63	92	86
	MAR-SEP	17.1	34	50	54%	68	99	92
	APR-JUL	11.2	26	39	51%	55	83	77
Big Wood R at Hailey	APR-JUL	79	121	155	66%	193	255	235
	APR-SEP	89	137	175	66%	220	290	265
Big Wood R ab Magic Reservoir	APR-JUL	15.6	45	74	44%	110	176	170
	APR-SEP	18.2	50	81	45%	120	190	182
Camas Ck nr Blaine	APR-JUL	0	4	11.1	14%	22	44	82
	APR-SEP	0.01	4.2	11.4	14%	22	44	83
Big Wood R bl Magic Dam 2	APR-JUL	14.2	55	98	39%	154	260	250
	APR-SEP	17.3	62	108	41%	166	275	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

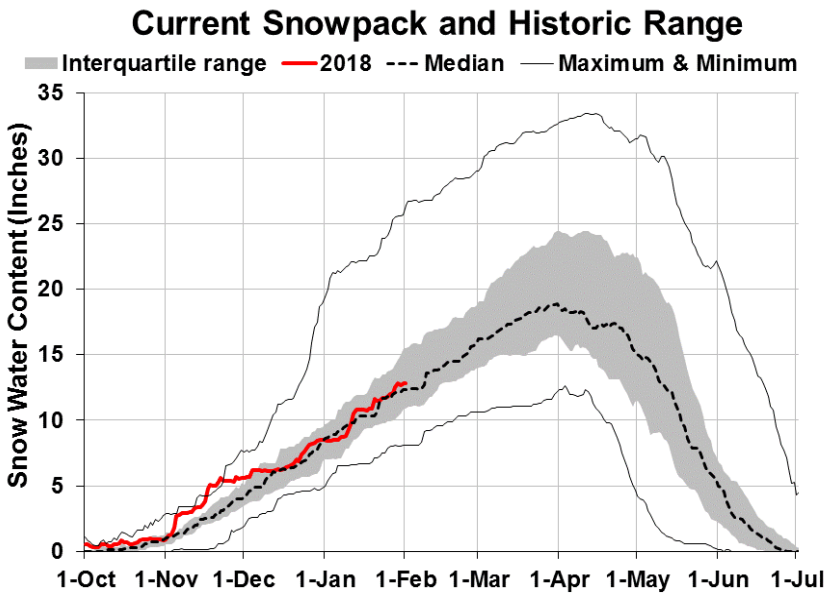
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Mackay Reservoir	34.0	38.5	26.0	44.4
Little Wood Reservoir	25.1	23.6	16.3	30.0
Magic Reservoir	160.0	87.6	68.9	191.5

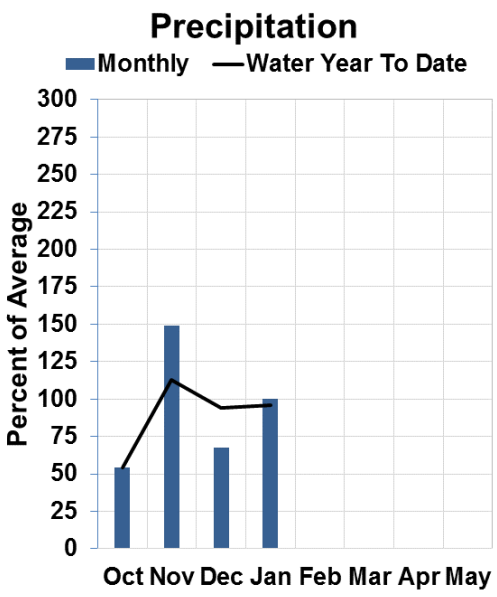
Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	% of Median 2017
Camas-Beaver Creeks	4	57%	89%
Birch-Medicine Lodge Creeks	2	118%	107%
Little Lost River	3	99%	110%
Big Lost River ab Mackay	6	84%	123%
Big Lost Basin Total	7	84%	119%
Fish Creek	3	50%	163%
Little Wood River	4	56%	134%
Big Wood River ab Hailey	7	80%	123%
Camas Creek	5	42%	154%
Big Wood Basin Total	12	67%	134%

Upper Snake River Basin

February 1, 2018





WATER SUPPLY OUTLOOK

January brought much of the same snowpack conditions to the Upper Snake River region with snowpacks at 107% of normal compared to 102% reported at the beginning of the month. These near normal conditions are reflected throughout the basin with the Henrys Fork currently at 101% of normal, the Teton River at 99% of normal and the Gros Ventre Basin at 114% of normal. The headwaters of the Snake River hold the highest snowpacks with Pacific Creek at 117% of normal, and the Buffalo Fork at 120% of normal. The Portneuf, Blackfoot and Willow Creek basins range from 55% to 70% of normal snowpacks, comprising the lowest snowpack in the region. Overall, January precipitation in the Upper Snake basin was 97% of normal, and water year-to-date totals are also hovering around near normal amounts.

Reservoir storage is still near record levels at 87% of capacity in the system, the highest being Palisades Reservoir at 97%. As mentioned last month, the carryover storage has really set Snake River water users up for another plentiful water year with near normal snowpacks, good streamflow projections and baseflow. Willow Creek near Ririe is the lowest forecast at 51% of average.

Upper Snake River Basin Streamflow Forecasts - February 1, 2018

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	355	440	500	94%	560	645	530
	APR-SEP	500	605	675	95%	745	845	710
Falls R nr Ashton 2	APR-JUL	290	335	365	100%	395	440	365
	APR-SEP	350	400	440	101%	475	525	435
Teton R nr Driggs	APR-JUL	75	104	124	81%	144	174	154
	APR-SEP	96	132	157	81%	182	220	193
Teton R nr St Anthony	APR-JUL	199	265	305	84%	350	415	365
	APR-SEP	240	315	370	85%	420	495	435
Henrys Fk nr Rexburg 2	APR-JUL	915	1140	1290	92%	1440	1660	1400
	APR-SEP	1170	1460	1650	92%	1850	2140	1790
Snake R at Flagg Ranch	APR-JUL	405	470	520	112%	565	630	465
	APR-SEP	445	520	570	112%	615	690	510
Snake R nr Moran 2	APR-JUL	660	765	835	109%	910	1010	765
	APR-SEP	725	845	925	109%	1010	1120	845
Pacific Ck at Moran	APR-JUL	154	179	195	119%	210	235	164
	APR-SEP	163	188	205	118%	220	250	173
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	255	295	325	116%	350	395	280
	APR-SEP	285	335	370	116%	400	450	320
Snake R ab Reservoir nr Alpine 2	APR-JUL	1950	2220	2400	111%	2590	2860	2170
	APR-SEP	2230	2540	2760	110%	2970	3290	2500
Greys R ab Reservoir nr Alpine	APR-JUL	225	270	305	100%	335	385	305
	APR-SEP	260	315	355	99%	390	445	360
Salt R ab Reservoir nr Etna	APR-JUL	130	200	245	82%	295	365	300
	APR-SEP	172	255	310	84%	365	445	370
Snake R nr Irwin 2	APR-JUL	2360	2790	3080	102%	3370	3800	3010
	APR-SEP	2750	3250	3590	103%	3930	4430	3500
Snake R nr Heise 2	APR-JUL	2550	3000	3310	102%	3620	4070	3240
	APR-SEP	3000	3520	3880	103%	4240	4770	3780
Willow Ck nr Ririe 2	MAR-JUL	10.5	23	34	51%	48	71	67
Portneuf R at Topaz	MAR-JUL	20	38	50	66%	62	79	76
	MAR-SEP	26	48	63	68%	78	100	93
Snake R at Neeley 2	APR-JUL	580	1400	1960	74%	2510	3330	2650
	APR-SEP	465	1390	2020	72%	2650	3570	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

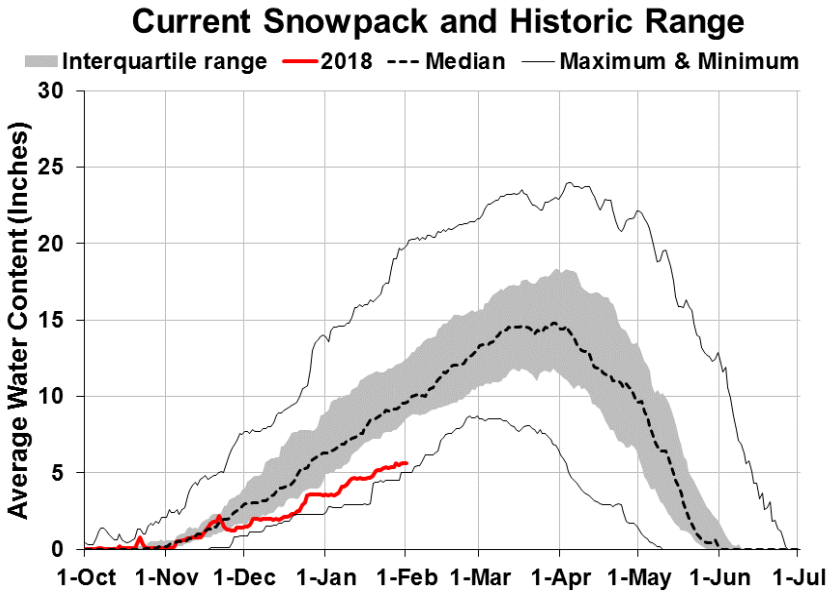
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Jackson Lake	657.1	555.1	431.2	847.0
Palisades Reservoir	1352.8	638.3	911.2	1400.0
Sub-Basin Total	**2010.0**	**1193.4**	**1342.4**	**2247.0**
Henrys Lake	82.3	82.4	80.1	90.4
Island Park Reservoir	119.8	87.7	100.0	135.2
Grassy Lake	13.3	14.1	11.9	15.2
Sub-Basin Total	**215.4**	**184.2**	**192.0**	**240.8**
Ririe Reservoir	47.1	48.4	38.7	80.5
Blackfoot Reservoir	272.2	219.7	176.3	337.0
American Falls Reservoir	1436.8	1115.5	1116.0	1672.6
Basin-Wide Total	**3981.4**	**2761.2**	**2865.4**	**4577.9**

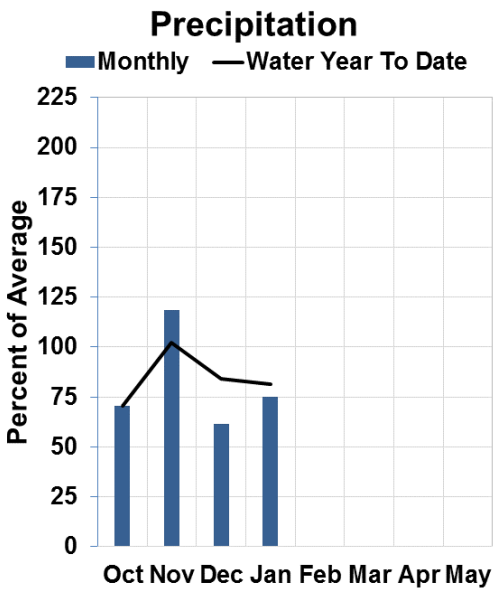
Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	% of Median 2017
Henrys Fork-Falls River	8	102%	105%
Teton River	5	99%	119%
Henrys Fork ab Rexburg	13	101%	110%
Snake River ab Jackson Lake	12	109%	124%
Pacific Creek	4	117%	147%
Buffalo Fork	3	120%	139%
Gros Ventre River	4	114%	126%
Hoback River	6	112%	155%
Greys River	4	117%	137%
Salt River	5	100%	133%
Snake ab Palisades Resv	33	107%	133%
Willow Creek - Ririe	7	72%	129%
Blackfoot River	4	71%	132%
Portneuf River	6	56%	164%
Snake River ab American Falls	50	96%	132%

Southside Snake River Basins

February 1, 2018





WATER SUPPLY OUTLOOK

Southside Snake basins have received very little in the way of snow this year. Higher than normal temperatures and a lack of storms have the snowpack ranging from 78% of normal in Raft River basin down to a low of 34% of normal in the Owyhee basin. Among all SNOTEL sites in the Southside Snake only Howell Canyon is above the 25th percentile for snow water equivalent (SWE) compared to period of record with several sites in the bottom 5th percentile. Water year-to-date precipitation in the Southside Snake basins ended January with a range of 80% to 85%. Extended outlooks show roughly equal chances of above or below average precipitation for the Southside Snake basins, so if a few storms come through, this year could still end up with normal precipitation.

The water supply outlook is still looking good for those on reservoir irrigation in the Southside Snake basins due to carryover from the 2017 runoff. Reservoirs remain well above average across the southern part of Idaho. The highest with respect to normal storage is in Salmon Falls reservoir at 217%, which is 52% of capacity. Water users who rely on reservoir storage should be in good shape for the 2018 runoff season. Streamflow forecasts remain much lower than normal and decreased from January 1, they now range from about 30% of average for the Owyhee River to a high of 77% for Trapper Creek near Oakley.

Southside Snake River Basins Streamflow Forecasts - February 1, 2018

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	5.2	9.5	13.1	60%	17.3	25	22
	MAR-SEP	5.4	10	13.9	58%	18.5	26	24
Trapper Ck nr Oakley	MAR-JUL	3	3.8	4.4	75%	5.1	6.1	5.9
	MAR-SEP	3.9	4.8	5.5	77%	6.2	7.4	7.1
Oakley Reservoir Inflow	MAR-JUL	8	13.2	17.5	63%	22	31	28
	MAR-SEP	9	14.7	19.4	63%	25	34	31
Salmon Falls Ck nr San Jacinto	MAR-JUL	21	32	42	52%	52	69	81
	MAR-SEP	23	35	45	53%	55	73	85
Bruneau R nr Hot Spring	MAR-JUL	40	91	126	61%	160	210	205
	MAR-SEP	43	96	132	61%	168	220	215
Reynolds Ck at Tollgate	MAR-JUL	0.7	1.8	3.5	40%	5.3	8	8.8
Owyhee R nr Gold Ck 2	MAR-JUL	0.74	3.6	6.7	24%	10.9	18.8	28
	APR-JUL	0	1.21	3.6	16%	7.3	15.1	22
Owyhee R nr Rome	FEB-JUL	42	118	192	33%	285	450	580
	FEB-SEP	48	127	205	34%	295	465	595
	APR-JUL	9.6	54	105	30%	172	300	345
Owyhee R bl Owyhee Dam 2	FEB-JUL	64	152	235	37%	335	510	635
	FEB-SEP	80	175	260	39%	360	545	665
	APR-JUL	22	76	132	35%	200	335	375
Snake R bl Lower Granite Dam 1	APR-JUL	15700		20500	104%		24100	19800
	APR-SEP	17800		23000	103%		26700	22300

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

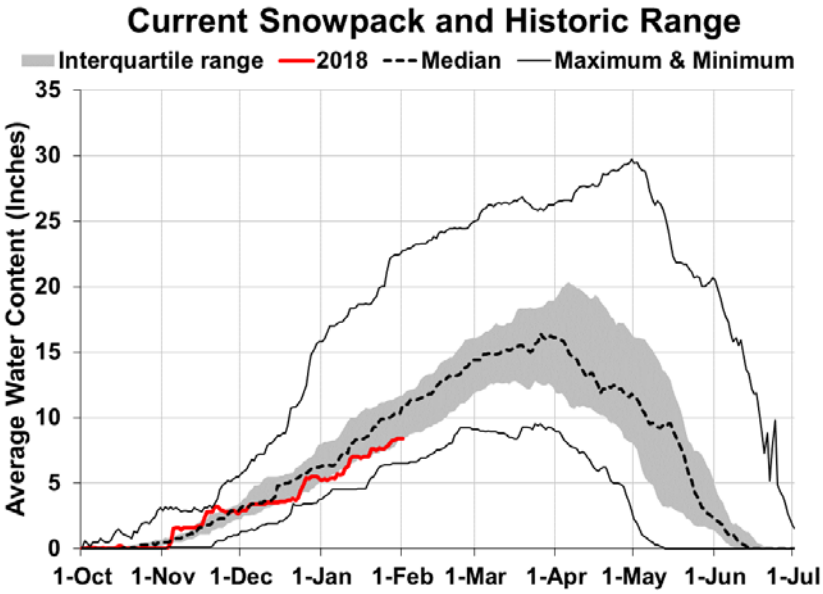
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Oakley Reservoir	35.3	18.3	22.5	75.6
Salmon Falls Reservoir	94.1	43.3	43.3	182.6
Wild Horse Reservoir	60.6	33.1	33.2	71.5
Lake Owyhee	490.6	246.8	345.3	715.0
Brownlee Reservoir	1014.1	1125.1	1189.0	1420.0

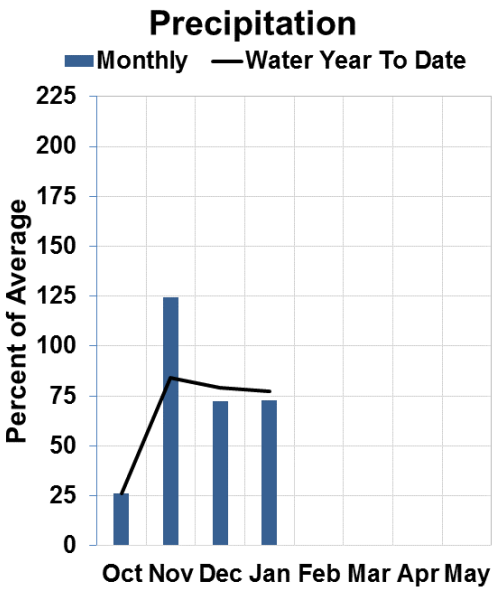
Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	2017
Raft River	2	78%	165%
Goose-Trapper Creeks	2	64%	123%
Salmon Falls Creek	7	60%	127%
Bruneau River	8	51%	154%
Reynolds Creek	1	46%	375%
Owyhee Basin Total	11	34%	163%
Owyhee Basin Snotel Total	8	37%	161%

Bear River Basin

February 1, 2018





WATER SUPPLY OUTLOOK

The Bear River basin is experiencing a very different snowpack than last year at 82% of normal compared to 162% last year. Water year-to-date is 78% of normal precipitation this year compared to 157% for last year. Some of the smaller and lower tributaries like the Malad River are suffering more with the snowpack at Oxford Springs SNOTEL site at only 28% of normal, see current conditions. Water users in southeast Idaho need more snowfall or a wet spring to make up for the lack of snow. The Smiths and Thomas forks hold the most snow in the Bear River basin at 98% of normal.

The good news is that both Bear Lake and Montpelier Reservoir are storing well above average at 173% and 180%, respectively. Last year's storms are really paying dividends this winter by helping to mitigate the effects of a low snow year. With streamflow forecasts ranging from 55% to 89% of average, water users should pay special attention to their specific basin especially if relying on natural flow water rights in the smaller tributaries. NOAA continues to predict above average temperatures for the region and normal precipitation, thus low elevation snowpacks may continue to suffer: NOAA three month outlook.

Bear River Basin Streamflow Forecasts - February 1, 2018

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	42	66	82	73%	99	123	112
	APR-SEP	47	73	91	74%	109	136	123
Bear R ab Resv nr Woodruff	APR-JUL	7.3	46	82	68%	118	170	121
	APR-SEP	5.1	43	82	64%	121	178	128
Big Ck nr Randolph	APR-JUL	0.19	0.87	2.1	55%	3.3	5.1	3.8
Smiths Fk nr Border	APR-JUL	49	66	78	88%	90	107	89
	APR-SEP	59	79	93	89%	107	127	104
Bear R bl Stewart Dam 2	FEB-JUL	5.5	98	160	74%	220	315	215
	FEB-SEP	7.6	110	180	75%	250	350	240
	APR-JUL	11	47	105	57%	163	250	183
	APR-SEP	6.2	55	120	59%	185	280	205
Little Bear at Paradise	APR-JUL	3.2	14.5	25	56%	35	51	45
Logan R nr Logan	APR-JUL	44	70	81	73%	104	130	111
Blacksmith Fk nr Hyrum	APR-JUL	7.9	21	30	70%	39	52	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

Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Bear Lake	1011.7	493.6	584.8	1302.0
Montpelier Reservoir	3.1	2.1	1.7	4.0

Watershed Snowpack Analysis: February 1, 2018

Basin Name	# of Sites	% of Median 2018	% of Median 2017
Smiths-Thomas Forks	4	98%	159%
Bear River ab WY-ID Line	10	87%	167%
Montpelier Creek	2	79%	163%
Mink Creek	1	65%	148%
Cub River	1	92%	155%
Bear River ab ID-UT Line	18	82%	162%
Malad River	1	28%	172%

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 <u>does not include</u> 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 <u>includes</u> 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

<u>Southside Snake River Basins</u>
Goose Ck nr Oakley - no adjustments
Trapper Ck nr Oakley - no adjustments
Oakley Res Inflow - *<u>flow does not include</u> 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

<u>Bear River Basin</u>
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

<u>Reservoir Capacity Definitions</u> (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
<u>Panhandle Region</u>						
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
<u>Clearwater Basin</u>						
Dworshak	Unknown	**1452.00**	**2016.00**	**---**	**3468.0**	Inactive + Active
<u>West Central Basins</u>						
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
<u>Wood and Lost Basins</u>						
Mackay	0.13	---	**44.37**	**---**	**44.4**	Active
Little Wood	Unknown	---	**30.00**	**---**	**30.0**	Active
Magic	Unknown	---	**191.50**	**---**	**191.5**	Active
<u>Upper Snake Basin</u>						
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
<u>Southside Snake Basins</u>						
Oakley	0.00	---	**75.60**	**---**	**75.6**	Active
Salmon Falls	48.00	**5.00**	**182.65**	**---**	**182.6**	Active
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
<u>Bear River Basin</u>						
Bear Lake	5000.00	119.00	**1302.00**	**---**	**1302.0**	Active:
Capacity does not include 119 KAF that can be 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 72 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

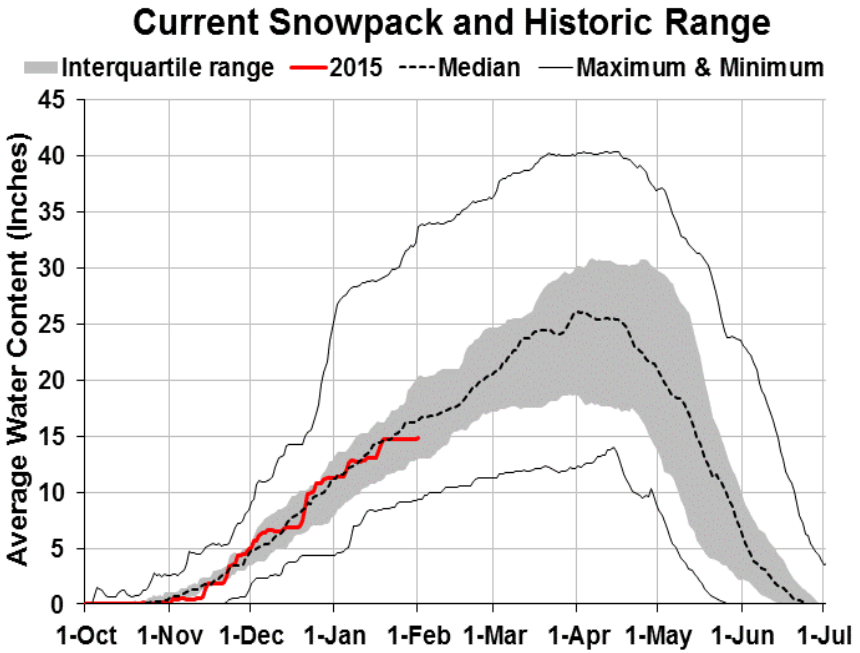
Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <---Drier----------Projected Volume----------Wetter---> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton	JUN-JUL	72	106	129	56	152	186	230
	JUN-SEP	198	245	280	68	315	360	410

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.



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

OFFICIAL BUSINESS

Issued by
Leonard Jordan, Acting Chief
Natural Resources Conservation Service
Washington, DC

Released by
Jerry Raynor, Acting State Conservationist
Shawn Nield, State Soil Scientist
Natural Resources Conservation Service
Boise, Idaho

Prepared by
Idaho Snow Survey Staff
Ron Abramovich, Water Supply Specialist
Danny Tappa, Hydrologist
John Wilford, Electronics Technician
Tom Beers, Field Hydrologist
Earl Adsley, Trainee Hydrologist
Tina Andry, Trainee Hydrologist

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

Numerous other groups and agencies provide funding and/or cooperative support for the collection, operation and maintenance of the Cooperative Idaho Snow Survey Program. Your cooperation is greatly appreciated!