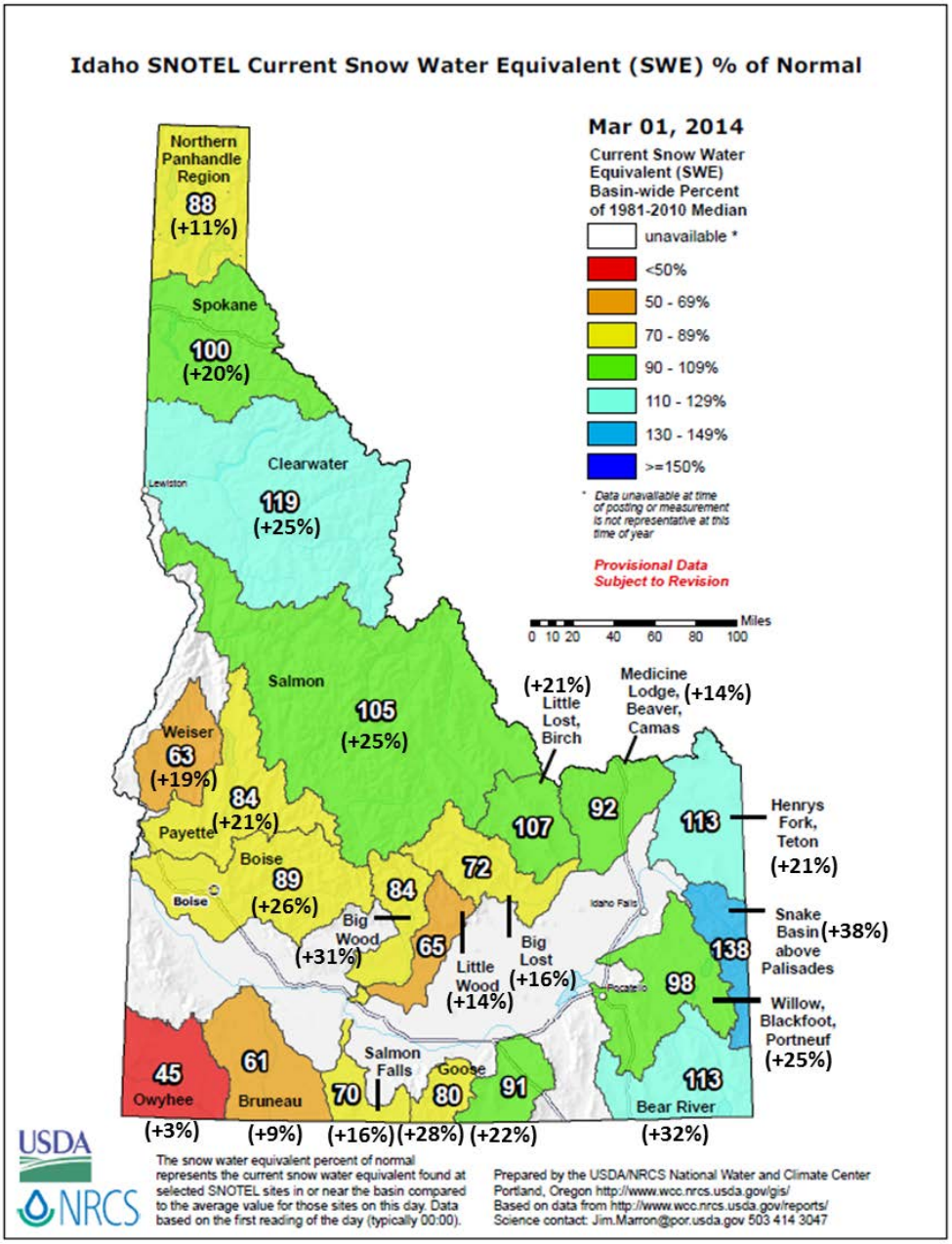
USDA United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
March 1, 2014



The "Pineapple Express" and major storm cycle during February brought up to twice the normal monthly precipitation throughout most of Idaho and also brought good news for most of Idaho's numerous water users. The above map shows the March 1 snow water content levels based on SNOTEL sites in the region and the increase in snowpack percentage points (in parentheses) since the 1st of February.

Basin Outlook Reports
and 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.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/
Natural Resources Conservation Service Snow Surveys
9173 West Barnes Drive, Suite C
Boise, Idaho 83709-1574 (208) 378-5740

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
March 1, 2014

SUMMARY
February brought just what was needed: rain to the lower elevations to prime the soils and get the streams flowing above their low baseflow levels from last fall. Abundant snow fell in the mountains, and cold temperatures kept the snow accumulating in our mountains to provide our annual water supply. February precipitation ranged from above to well above average, with some basins receiving more than twice their February normal amount. The least amounts were in the Panhandle Region, Little Wood and Big Lost basins, 115-130% of normal. The big winners received two times their normal February amounts and include the Boise and Bear basins, while the Oakley basin and Upper Snake basin in western Wyoming received 215-230% of normal amounts. The highest snowpack percentages are now approaching 150% of median in the Snake River headwater tributaries with some basins reporting the most snow since 1999. The snowpack decreases across Idaho from east to west and with the lowest packs at only 40-60% in the lower elevation drainages of the Weiser, Mann, Owyhee, Camas, Fish, Little Wood, and Mud Lake basins. The Owyhee snowpack is the lowest since 1977.

After the steep drop in streamflow forecast volumes in January, forecasts rebounded and bounced back during February like a good month on the stock market. The Upper Snake tributaries host the highest summer streamflow forecasts at 145% of average. The Clearwater streams also jumped up and are now forecast near 120% of average along with the important southern Idaho irrigator forecast, at the Snake River near Heise. The Salmon basin should see near normal runoff this season along with the Panhandle streams. The Payette and Boise streams are forecast in the 70-90% of average. Elsewhere across most of central Idaho streams are forecast at 40-65% of average in the Wood, Lost, Weiser and the southern basins from the Bruneau to the Bear River. The lowest projected flows are in the Owyhee's and Camas Creek near Fairfield at only 20% of average, but we know that with some rain these rivers will display their flashy side and jump up in flow until the rain passes.

To maintain the streamflow forecast volumes at this level, near normal or better snowfall is still needed and cold mountain temperatures are required to keep the snow in the high country until the snowpacks reach their normal seasonal peaks in April. The exceptions are the Clearwater and Upper Snake basins which already exceed their seasonal peak snow water content amounts; while the Owyhee basin which may have seen its snowmelt peak flow in February. With little time to accumulate snow in these lower elevation basins, rain is the next best thing and is in the forecast for early March.

Water supply shortages have not been eliminated in all of our basins. Surface irrigation shortages are very likely to occur in the Owyhee basin; water supplies will be similar to 1992 and 2003 which saw only 15-30% of average runoff. Some shortages are still likely in the Big Wood, Little Wood, Big Lost, Little Lost, Oakley and Salmon Falls basins based on the 50% Chance of Exceedance Forecast in the Surface Water Supply Index (SWSI). Stay tuned to see how this wild winter weather ends and if the current abundant moisture pattern continues to track across Idaho basins into March, April and May; or not, and leaves the Owyhee basin high and dry.

SNOWPACK

The highest snowpacks remain in the basins along the continental divide, ranging from 130-145% of median in the Lochsa, Selway and Lemhi basins to 140-155% in the Pacific, Buffalo, Gros Ventre, Hoback, Greys, and Salt in western Wyoming, and Smith and Thomas Fork that drain into the Bear. Henrys Fork and Little Lost snowpacks are near normal along with the lower elevation drainages in eastern Idaho. Then, the snowpacks continue the decrease from east to west with the Big Lost and Big Wood at about 77% of median and even less in the lower elevations. Fish Creek is 37% of median, Camas Creek 63% and only 45% in the large Owyhee basin. This year's snowpack distribution is unusual with such a large contrast from east to west. In year's past, the Salmon River typically was the divide between better snows in the northern or southern part of Idaho, but not this year because of the jet stream's storm track that allowed basins along the continental divide to capitalize on the moisture in the early winter.

PRECIPITATION

As mentioned last month "let's hope the weather phenomena that created the blocking ridge pattern has dissipated and opened the gates for storms to track across Idaho" it appears it has. The zonal weather pattern coming into Idaho for most of February brought abundant moisture to the state. On the wet side, the snow water equivalent in the Boise basin had the 4th highest February increase since 1961; only years 1986, 1999, and 1972 received more during February. The Clearwater basin had its 2nd greatest February increase since 1981; only February 1999 had a bigger increase. The dry side includes the Owyhee basin which received 150% of normal February amounts, but not enough to make a dent in their expected shortages. The Big Lost and Little Lost basins also missed out on the fun playing catch-up but still received 115-125% of normal February precipitation which helped, but didn't solve their problems by adding enough snow in the mountains to meet their summer demands. Water year to date precipitation varies across the state with the least amounts in the Little Wood, Big Lost and Weiser basins at 57-63% of average. The Snake headwaters in Wyoming lead, the way and now stand at 119% of normal amounts since the 2014 water year started October 1, 2013. Near normal amounts have fallen in the Henrys Fork, Bear, Goose and Clearwater basins. Elsewhere, water year to date amounts are in the 70-90% of normal range.

RESERVOIRS

The low reservoir carryover storage going into this year may soon be just a reminder of last year's runoff in some basins. More analyses and discussions will occur this month about which reservoirs will fill, and which ones may not. Here's a quick summary as conditions continue to change and forecasts continue to increase. Northern Idaho's numerous lakes and storage facilities have the potential to fill from the good snowfall in Idaho, Montana and Canada depending on flood control and other management decisions. Dworshak Reservoir is storing an average amount, 68% full, and will have plenty of water to pass this year with the streamflow forecast increasing every month and now at 110% of average. The Payette system is also storing average amounts at 63% full and probably will fill. The Boise system is 94% of average, half full. The question that remains is whether Anderson Ranch

Reservoir will fill – this will be answered by the amount of precipitation that falls in the coming months given the marginal 75% of normal inflow forecast. Mann Creek Reservoir in the Weiser basin remains low at 25% of average, 12% full. With a similar snowpack as last year, and Mann Creek's storage less than last year, when the reservoir barely filled, more rain is needed just like in the Owyhee basin. Magic Reservoir has 50,000 acre-feet, 68% of average, 26% full, and needs more snow, a cool spring and at least the 30% Chance of Exceedance Forecast (204,00 KAF) to occur to provide marginally adequate irrigation supplies. Little Wood is half full at 84% of average while Mackay Reservoir is now two-thirds full. Both will need good runoff to satisfy all the user's needs. Jackson Lake and Palisades Reservoir have a combined storage of 56% average, but only 34% full. That may actually be good since there is a really big snowpack at 147% of average above Palisades Reservoir as of March 6. Ririe Reservoir is 112% of average, 58% of capacity. The dry Southside reservoirs (Salmon Falls, Oakley, Owyhee, and Wildhorse) are only 11-24% of capacity, and range from 32% of average for the Owyhee to 72% of average for Oakley Reservoir. Bear Lake is storing near normal levels at 95% of average, but only half full. Montpelier Reservoir remains low at 78% of average, 35% full, and needs good summer inflows to meet and maintain the summer irrigation demand around Montpelier.

STREAMFLOW

With much of the water supply information already mentioned, it is important to consider the use of all five Chance of Exceeding Forecasts in the decision making process. Persistence is still the best weather forecast and wins when these types of patterns set in; what you see in your area is what you will continue to have until a different weather pattern sets in. This pretty much sums up Idaho's weather pattern for the past 30 days. Numerous storms tracked across the state increasing snowpacks to their current levels with the highest snowpacks in the Clearwater basin and Upper Snake. The 90 day NOAA temperature outlook indicates a chance of warmer temperatures over most of Idaho. The NOAA precipitation outlook favors Equal Chance (EC) of high or low amounts for the short and longer term periods. Without strong signals, these forecasts also mean the confidence levels are low with an equal chance for anything and everything. Best bet, watch the weather; with normal or better future precipitation or delayed snow melt, streamflow forecasts will continue to increase and users may wish to hedge toward the wetter forecasts in the basins with the greatest snowpacks and better soil moisture levels. Elsewhere, with lingering 2013 drought effects in central and southern Idaho, users may wish to hedge toward the drier forecasts unless future weather dictates differently. The key is to be flexible and watch the weather closely because of the greater degree of climate variability that is occurring.

The Idaho Surface Water Supply Index (SWSI) combines current reservoir storage with the five Exceedance Streamflow Forecasts and is very useful in years like this to look at potential irrigation shortages or surplus. Much more detailed information is available on our SWSI page along with historical graphs and analysis tables along with updated daily volume streamflow forecasts are on our Daily Water Supply Forecast page:
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/id/snow/?cid=stelprdb1240689 and

http://www.nrcs.usda.gov/wps/portal/nrcs/detail/id/snow/?cid=nrcs144p2_047016

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. Forecasts published in this report are produced by the NRCS with the exception of the NWS main-stem Snake River forecasts.

RECREATION

Could it be too much of a good thing? The seemingly non-stop storms in February and early March practically doubled the snowpack throughout the Idaho mountains. This put non-stop grins on sledders, shredders and skiers, but the long dry and cold January created a weak low-density snow layer that persists in many areas under the now heavily laden slopes. Avalanche incidents have been frequent of late with tragic fatalities in a few cases already. Spring skiing and sledding can still be awesome the rest of this season since the deep snow has now covered lots of brush, rocks and stumps, but we strongly advise all those heading out for mountain recreation to be prepared and definitely consult the USFS Avalanche Centers for current conditions. Even trail riders should be aware because slides can commonly be triggered even from the bottoms of slopes when conditions are similar to now with the weak base layer.

Whitewater and flatwater boating – wow! The outlook has changed in a dramatically positive direction with snowpacks now normal to well above normal in major streams like the Selway, Lochsa, Salmon, and upper Snake. Additionally, many of the reservoirs that were low following last year's dry conditions are now expected to fill and should stay full longer due to the long and high runoff season projected based on the high snowpacks. Desert river rats, however, are probably saying "rats" right about now since the famous and beautiful southern Idaho streams like Bruneau and Owyhee have the lowest snowpack around at barely half of normal. There may be a small push if we get a sudden prolonged warm-up and a good rain, but it could easily be here and gone before you know it.

Western Snow Conference: April 14-17, 2014 in Durango, Colorado, abstracts submission deadline has been extended. Topics of interest include Dust on Snow and its impacts; see WSC web page for details: http://www.westernsnowconference.org/

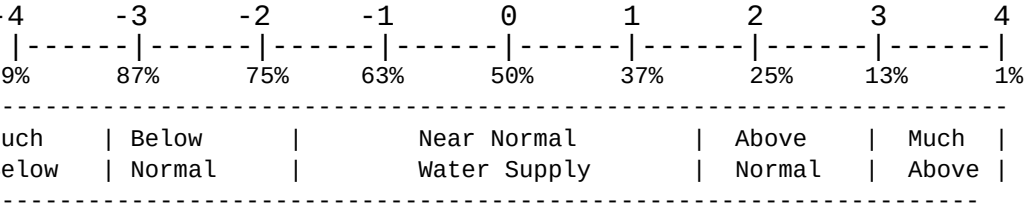
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) March 1, 2014

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.

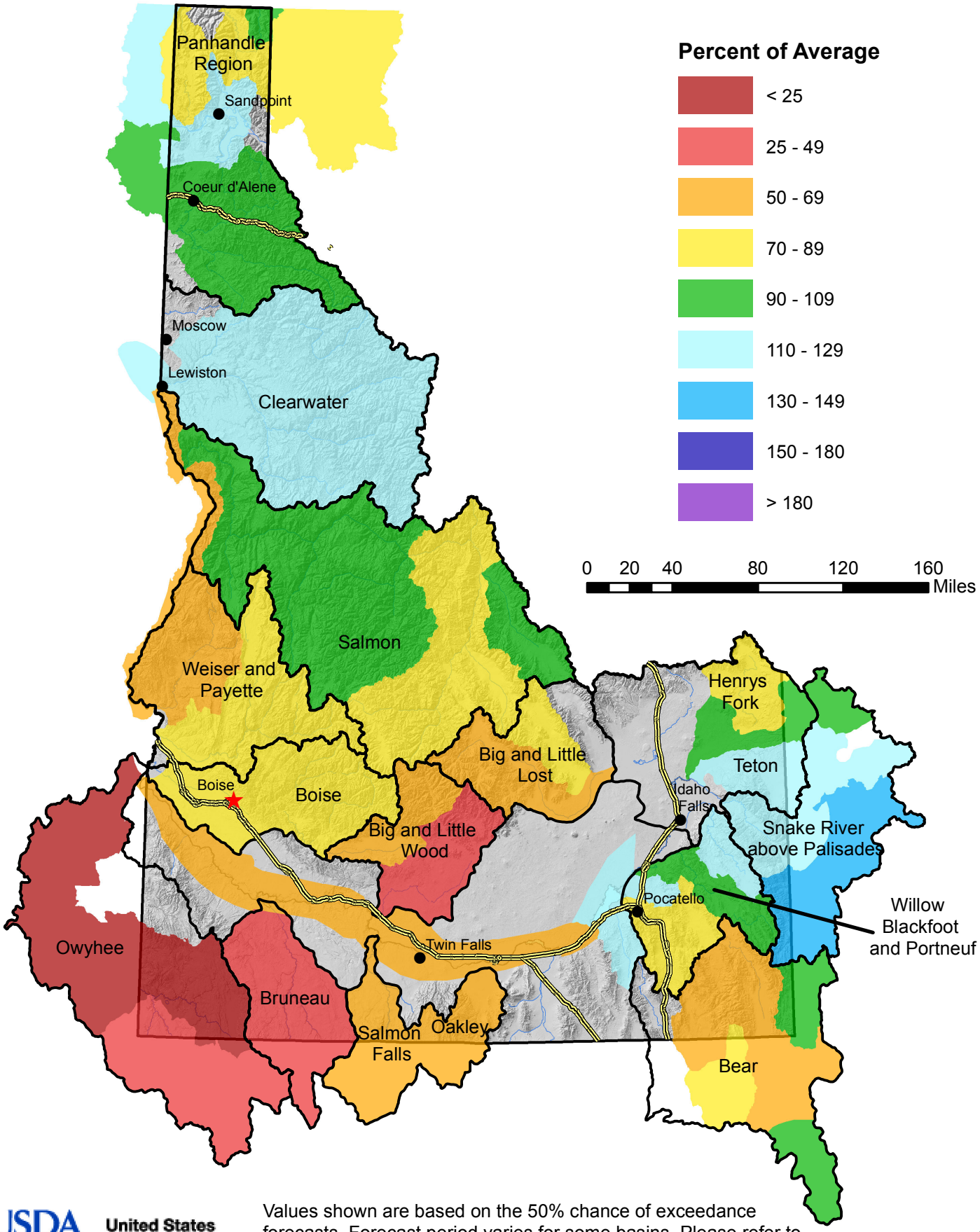
BASIN or REGION	***SWSI Value***	***Most Recent Year With Similar SWSI Value***	***Agricultural Water Supply Shortage May Occur When SWSI is Less Than***
Northern Panhandle	-0.4	2000/2007	NA
Spokane	-0.1	2006	NA
Clearwater	2.1	2009/2012	NA
Salmon	0.1	2010	NA
Weiser	-2.1	2004/2013	NA
Payette	-1.8	2002/2005	NA
Boise	-1.1	2002/2003	-1.5
Big Wood	-1.8	2002/2003	0.0
Little Wood	-2.8	2002/2013	-1.7
Big Lost	-1.6	2000/2007	0.5
Little Lost	-1.3	2000/2008	1.2
Teton	0.9	2006/2009	-3.9
Henrys Fork	-0.1	2000/2012	-3.4
Snake (Heise)	1.1	2006/2012	-1.5
Oakley	-2.3	2002/2004	-0.2
Salmon Falls	-3.3	2003	-1.0
Bruneau	-2.6	2007/2013	NA
Owyhee	-3.8	1992/2003	-3.4
Bear River	0.4	2001/2013	-2.7

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.

NRCS Streamflow April - July Streamflow Forecasts
March 1, 2014

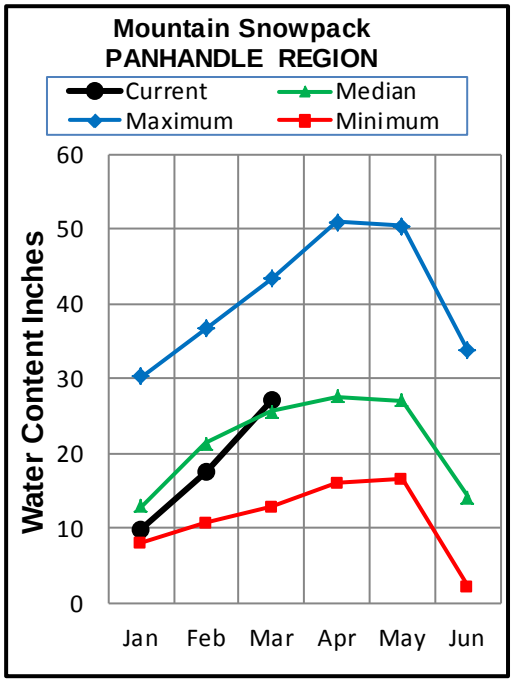


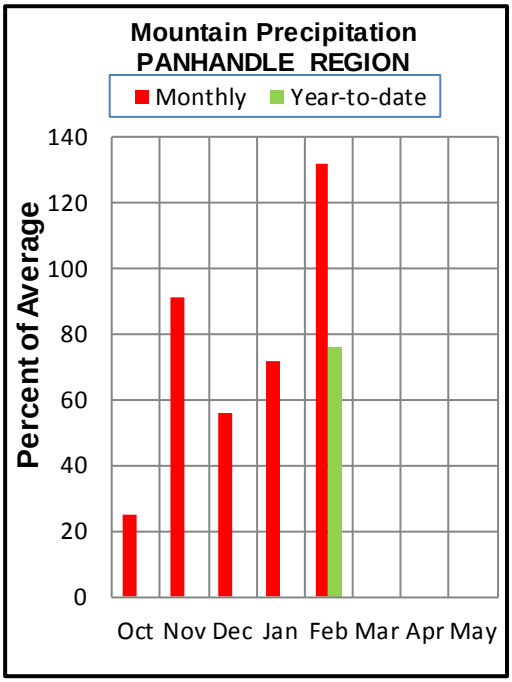
USDA United States Department of Agriculture

Values shown are based on the 50% chance of exceedance forecasts. Forecast period varies for some basins. Please refer to the Water Supply Outlook Report for more details regarding these forecasts.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/

PANHANDLE REGION

MARCH 1, 2014





WATER SUPPLY OUTLOOK

Idaho's Panhandle region received the least relative amount of February precipitation of anywhere in the state, but was still well above average, at 134% of normal monthly precipitation. This increased the water year to date precipitation in the area to 77% of average compared to the 66% of average last month. February's above average precipitation was able to bring the Panhandle region snowpack to above normal as well; it currently sits at 106% of the 1981–2010 median value. Percent of normal snowpack varies within the various basins of this region from a low of 77% in the Rathdrum Creek drainage to 119% in the Pend Oreille. Overall, reservoir storage did not experience large changes throughout February. Pend Oreille and Priest lakes remained much the same and are currently at 72% and 106% of average, respectively. Coeur d'Alene Lake is currently at 53% of average, increased from 45% last month. All streamflow forecasts in the Panhandle Region showed increases over last month, with some being quite substantial. Examples of this include the NF Coeur d'Alene River which is currently being forecast at 98% of average (April – September) compared to 66% a month ago and the Spokane River at Post Falls forecast increased from 71% to 99% of average. Increases in forecasted percent of average streamflow varied throughout the rest of the basin; overall forecasts center around normal with a low of 73% of average for the Priest River and a high of 117% at the Pend Oreille Lake Inflow and means a good water supply for all.

PANHANDLE REGION
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Kootenai R at Leonia (1,2)	APR-JUL	4800	5540	5880	89	6220	6960	6600
	APR-SEP	5710	6450	6780	89	7110	7850	7590
Moyie R at Eastport	APR-JUL	280	325	360	96	395	440	375
	APR-SEP	290	340	375	97	410	460	385
Boundary Ck nr Porthill	APR-JUL	83	95	104	89	113	125	117
	APR-SEP	87	100	109	89	118	131	123
Clark Fork at Whitehorse Rpds (1,2)	APR-JUL	9780	11400	12200	116	13000	14600	10500
	APR-SEP	10700	12600	13400	117	14200	16100	11500
Pend Oreille Lake Inflow (2)	APR-JUL	11600	12900	13700	116	14500	15800	11800
	APR-SEP	12800	14100	15000	117	15900	17200	12800
Priest R nr Priest River (1,2)	APR-JUL	380	505	565	72	625	750	780
	APR-SEP	405	540	605	73	670	805	830
NF Coeur d'Alene R at Enaville	APR-JUL	455	595	690	99	785	925	700
	APR-SEP	490	630	725	98	820	960	740
St. Joe R at Calder	APR-JUL	835	970	1060	101	1150	1290	1050
	APR-SEP	900	1040	1130	101	1220	1360	1120
Spokane R nr Post Falls (2)	APR-JUL	1660	2080	2360	99	2640	3060	2390
	APR-SEP	1740	2160	2450	99	2740	3160	2480
Spokane R at Long Lake (2)	APR-JUL	1890	2340	2650	101	2960	3410	2620
	APR-SEP	2090	2560	2870	101	3180	3650	2850

PANHANDLE REGION
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Hungry Horse Lake	3451.	2726.	2888.	2209.
Flathead Lake	1791.	668.2	725.3	812.8
Noxon Rapids Res	335.0	311.8	308.9	313.9
Pend Oreille	1561.	571.0	930.0	792.6
Coeur D'alene	238.5	70.2	67.2	132.8
Priest Lake Nr Coolin	119.3	60.3	50.2	57.1

PANHANDLE REGION
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Kootenai ab Bonners Fer	11	111	103
Moyie River	1	89	102
Priest River	5	86	92
Pend Oreille River	71	133	121
Rathdrum Creek	2	84	78
Coeur d'Alene River	8	115	105
St. Joe River	5	129	112
Spokane River	14	117	104
Palouse River	2	98	94

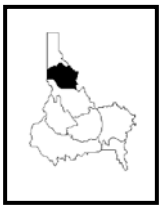
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

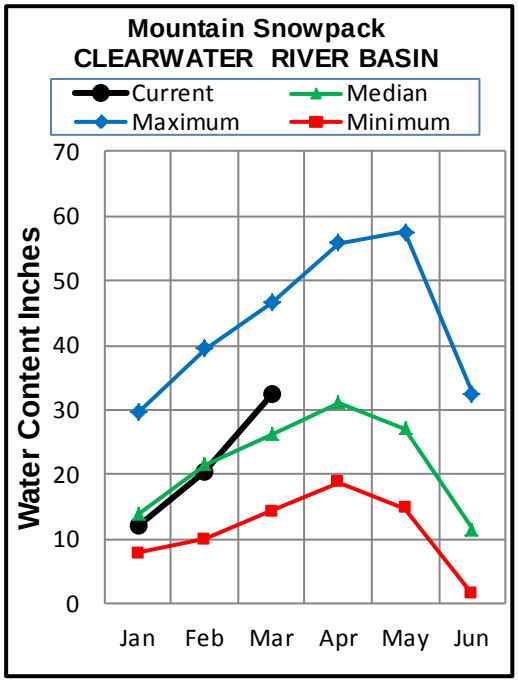
The average is computed for the 1981-2010 base period.

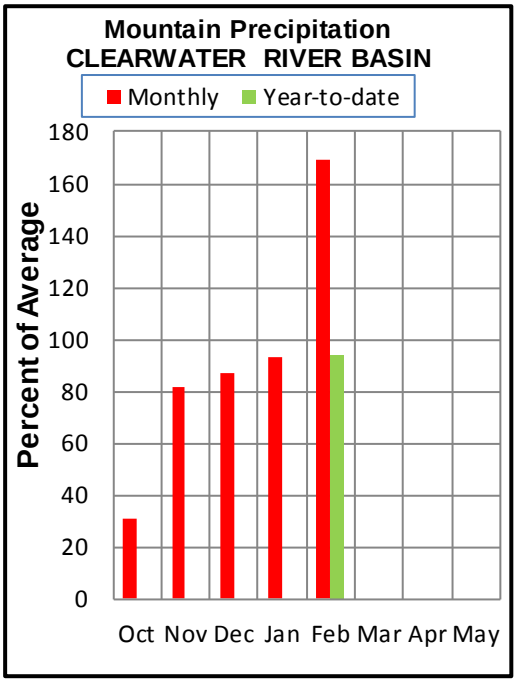
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

CLEARWATER RIVER BASIN

MARCH 1, 2014







WATER SUPPLY OUTLOOK

February precipitation in the Clearwater basin was 171% of average which was enough to bring the water year to date precipitation close to normal, at 95% of average. The February precipitation at individual SNOTEL sites within the basin varied widely from a low of 119% of average at Cool Creek to a high of 274% at Nez Perce Camp (just across the Montana border). Missoula received 40 inches of snow in February, its snowiest February since records stat in 1948 3rd snowiest month on record. Overall the Clearwater basin increased from 92% of median on February 1st to 120% on March 1st. The spatial variation in relative precipitation was also reflected in the snowpack with the Selway, in the southeast portion of the basin, receiving a 40% gain in percent of normal snowpack compared to last month and now is at 144% of normal. Dworshak Reservoir storage experienced no net change over the last month and currently is at 68% of capacity and 100% of average. All streamflow forecasts for the basin are currently above average. These range from a low of 110% of average for Dworshak Reservoir inflow to 124% for the Selway and the Clearwater at Orofino (April – July). The Lochsa River is currently forecast to have 117% of average streamflow. This is all good news for the whitewater enthusiasts who enjoy big water and long seasons. Spring precipitation and temperatures will determine magnitude and timing of snowmelt peak flow. Because of the large snowpack the potential exists for extreme high water events this year, but the high degree of uncertainty means water users should monitor the weather closely during the snowmelt season and be flexible in their planning.

CLEARWATER RIVER BASIN
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Selway R nr Lowell	APR-JUL	2020	2230	2380	124	2530	2740	1920
	APR-SEP	2110	2340	2490	123	2640	2870	2020
Lochsa R nr Lowell	APR-JUL	1370	1540	1650	117	1760	1930	1410
	APR-SEP	1450	1620	1730	117	1840	2010	1480
Dworshak Res Inflow	APR-JUL	1920	2430	2660	110	2890	3400	2410
	APR-SEP	2070	2590	2830	110	3070	3590	2570
Clearwater R at Orofino (1)	APR-JUL	4100	4960	5350	124	5740	6600	4310
	APR-SEP	4310	5200	5610	124	6020	6910	4540
Clearwater R at Spalding (1,2)	APR-JUL	6240	7630	8260	120	8890	10300	6890
	APR-SEP	6600	8040	8690	120	9340	10800	7270

CLEARWATER RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Dworshak	3468.	2365.	2581.	2358.

CLEARWATER RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
North Fork Clearwater	9	134	116
Lochsa River	2	151	129
Selway River	4	165	144
Clearwater Basin Total	16	138	120

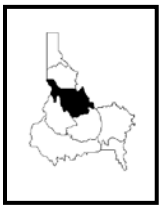
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

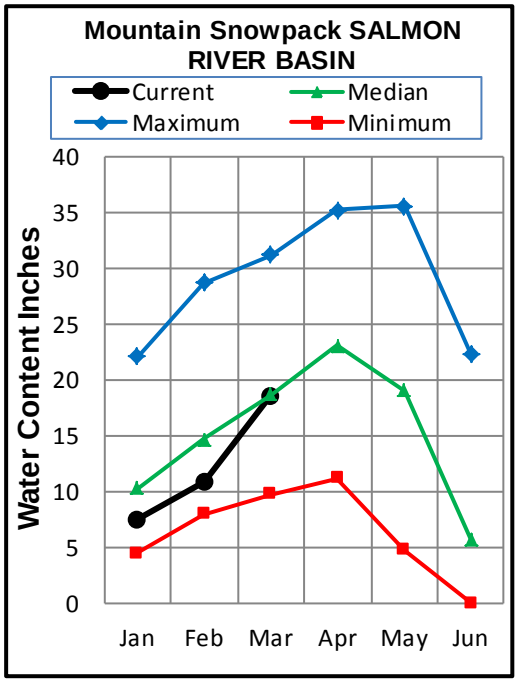
The average is computed for the 1981-2010 base period.

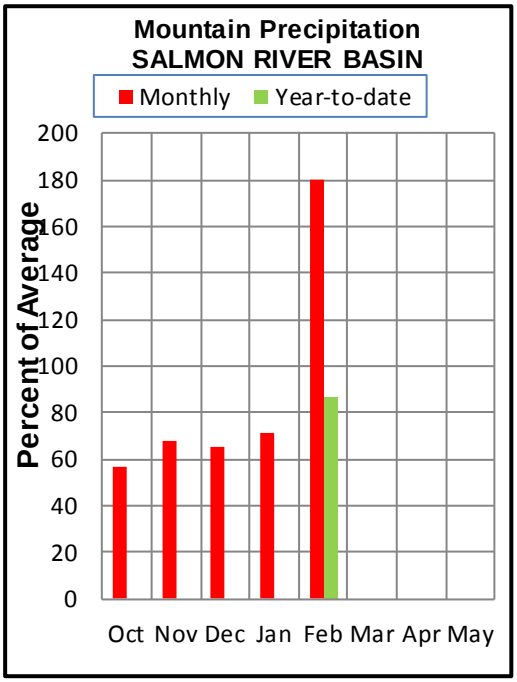
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

SALMON RIVER BASIN

MARCH 1, 2014







WATER SUPPLY OUTLOOK

As with much of the rest of the state, the Salmon basin received substantial February precipitation, at 180% of average. This additional moisture was able to bring the water year to date precipitation that was quite low at 66% of average last month to much closer to normal and now stands at 87% of average. The February precipitation was abundant, and much needed, especially when compared to the 77% of normal amount that fell in January. The near double monthly average precipitation in February brought the snowpack to 105% of normal levels, a 25% increase from February 1st. The percent increases in snowpack during February were relatively consistent across many sub-basins of the Salmon River drainage. For most basins the percent of median snowpack increased 20-25% and while the Salmon basin above Salmon increased 31% because of the good snowfall along and east of the continental divide. Not surprisingly, streamflow forecasts for the basin also reflected the above average precipitation and snowpack gains and increased significantly from last month. This brought good news to river running community and farming industry and put the water supply outlook now in the more plentiful category. The forecast for the MF Salmon River rose substantial from 58% of average (April–September) 90% and the Salmon River at White Bird forecast is now at 101% of average, up from 73% last month. One more month good precipitation will help maintain these levels.

SALMON RIVER BASIN
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Salmon R at Salmon (1)	APR-JUL	415	605	690	89	775	965	775
	APR-SEP	485	705	805	89	905	1130	900
Lemhi R nr Lemhi	APR-JUL	38	55	68	92	83	107	74
	APR-SEP	48	68	83	92	100	127	90
MF Salmon R at MF Lodge	APR-JUL	375	520	620	90	720	865	690
	APR-SEP	425	585	695	90	805	965	770
SF Salmon R nr Krassel RS	APR-JUL	154	199	230	85	260	305	270
	APR-SEP	167	210	240	83	270	315	290
Johnson Ck at Yellow Pine	APR-JUL	118	147	167	87	187	215	191
	APR-SEP	124	154	174	85	194	225	205
Salmon R at White Bird (1)	APR-JUL	3670	4850	5390	100	5930	7110	5370
	APR-SEP	4050	5370	5970	101	6570	7890	5940

SALMON RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

SALMON RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Salmon River ab Salmon	8	112	103
Lemhi River	6	134	135
Middle Fork Salmon Rive	3	96	90
South Fork Salmon River	3	93	84
Little Salmon River	4	114	88
Salmon Basin Total	23	117	105

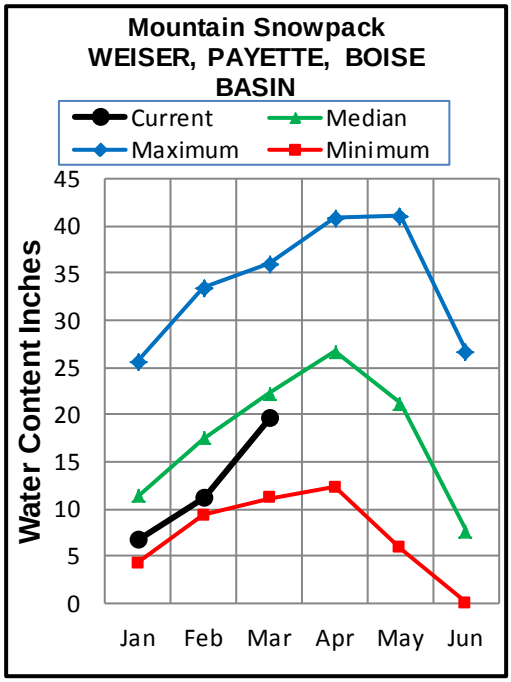
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

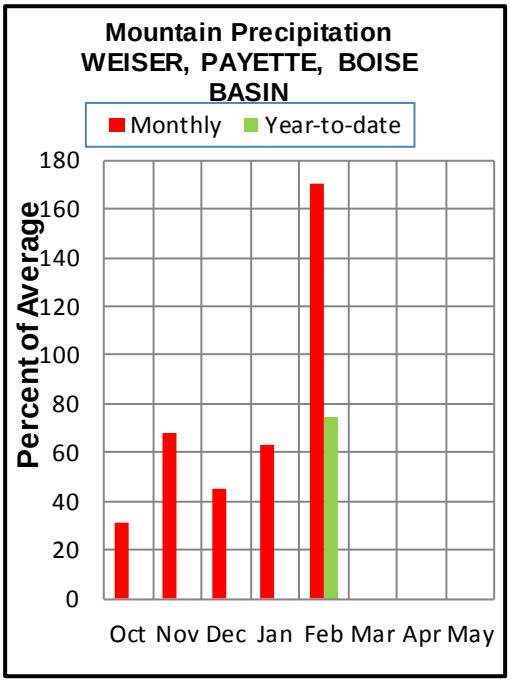
The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

WEISER, PAYETTE, BOISE RIVER BASINS

MARCH 1, 2014





WATER SUPPLY OUTLOOK

Idaho's west central mountains got back in the game thanks to back-to-back storms throughout February. The Boise basin received twice its normal precipitation for the month and posted the fourth greatest February gain in snow water going back to 1961. With a snowpack of 81% of normal and trending upward in early March, the Boise water supply shortages that once appeared near certain are much less likely than one month ago. The Payette basin also fared well, collecting 153% of its normal monthly precipitation. March 1 snowpacks in the Payette are similar to the Boise at about 80% of normal. The Weiser basin recorded 134% of average precipitation in February, but much of it was in the form of rain which melted snow at lower elevation measuring sites. The Weiser's basin-wide snowpack is 56% of normal, sixth lowest since 1961, but despite the rain this is still an improvement from last month when it was the lowest on record. Water year to date precipitation since October 1 across the west central mountains is still below average ranging from 62% in the Weiser, to 72% in the Payette and up to 83% in the Boise. Reservoir storage has caught up to near normal for this time of year in most of the major reservoirs along the Boise and Payette rivers. Anderson Ranch, the uppermost reservoir in the Boise system, is still only 56% of average, 31% of capacity and will be the hardest to fill due to its large size relative to the size of its watershed area. Water supply concerns have not been totally erased by February's rain and snow, but conditions look more hopeful this month. For Boise River water users, water supplies should be adequate or marginally adequate based on the 50% and 70% chance of exceedance forecasts, as long as near average precipitation continues in the coming months. If the weather turn dry, shortages are still possible based on 90% chance of exceedance forecast.

WEISER, PAYETTE, BOISE RIVER BASINS
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Weiser R nr Weiser (1)	MAR-JUL	122	240	310	58	385	585	530
	APR-JUL	76	164	215	58	275	425	370
	APR-SEP	89	182	235	59	295	450	400
SF Payette R at Lowman	APR-JUL	250	295	325	81	360	410	400
	APR-SEP	285	335	370	81	410	465	455
Deadwood Resv Inflow (1,2)	APR-JUL	52	79	91	74	103	130	123
	APR-SEP	56	85	98	75	111	140	131
Lake Fork Payette R nr McCall	APR-JUL	44	53	59	74	66	76	80
	APR-SEP	45	54	61	73	68	79	83
NF Payette R at Cascade (1,2)	APR-JUL	179	305	360	74	415	540	485
	APR-SEP	167	285	340	69	395	515	495
NF Payette R nr Banks (2)	APR-JUL	300	390	455	73	520	610	625
	APR-SEP	260	355	425	66	495	590	640
Payette R nr Horseshoe Bend (1,2)	APR-JUL	735	1010	1140	77	1270	1550	1480
	APR-SEP	670	1010	1160	71	1310	1650	1630
Boise R nr Twin Springs (1)	MAR-JUL	390	510	565	87	620	740	650
	APR-JUL	330	450	505	86	560	680	585
	APR-SEP	365	495	555	87	615	745	635
SF Boise R at Anderson Ranch Dam (1,2	MAR-JUL	225	340	395	76	450	565	520
	APR-JUL	187	305	355	75	405	525	475
	APR-SEP	205	325	380	75	435	555	510
Mores Ck nr Arrowrock Dam	MAR-JUL	68	93	112	76	133	167	147
	APR-JUL	48	70	87	76	106	137	115
	APR-SEP	51	73	91	76	111	143	119
Boise R nr Boise (1,2)	MAR-JUL	770	1040	1160	81	1280	1550	1430
	APR-JUN	615	805	890	78	975	1170	1140
	APR-JUL	585	870	1000	79	1130	1410	1260
	APR-SEP	675	960	1090	80	1220	1500	1360

WEISER, PAYETTE, BOISE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Mann Creek	11.1	1.3	4.4	5.2
Cascade	693.2	456.6	532.4	457.6
Deadwood	161.9	85.3	98.4	88.9
Anderson Ranch	450.2	137.9	270.4	247.0
Arrowrock	272.2	233.2	233.8	185.9
Lucky Peak	293.2	150.4	107.8	120.5
Lake Lowell (deer Flat)	165.2	13.7	118.2	97.7

WEISER, PAYETTE, BOISE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Mann Creek	1	69	50
Weiser River	6	84	56
North Fork Payette	9	99	80
South Fork Payette	5	109	85
Payette Basin Total	16	105	80
Middle & North Fork Boi	5	132	91
South Fork Boise River	8	114	81
Mores Creek	6	135	77
Boise Basin Total	16	126	81
Canyon Creek	2	149	52

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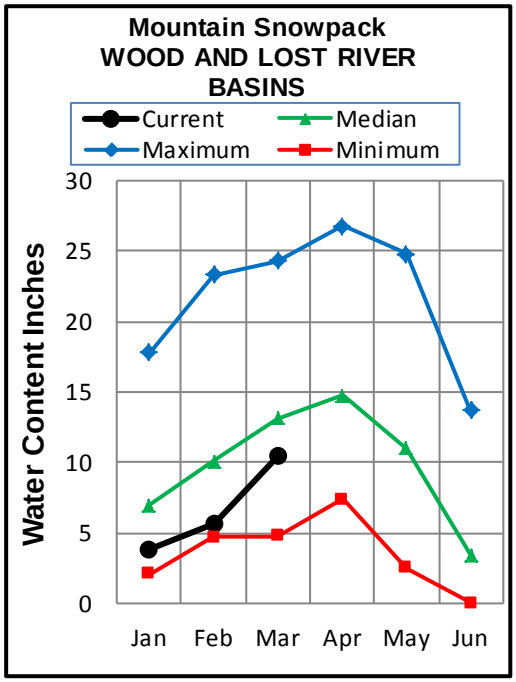
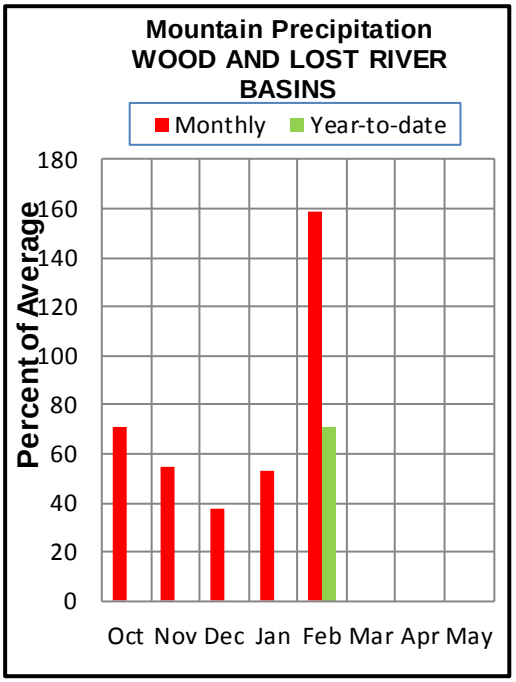
WOOD and LOST RIVER BASINS

MARCH 1, 2014





WATER SUPPLY OUTLOOK

February precipitation made up for drier than normal weather in January, unfortunately it did not erase the big deficit created earlier this winter. February produced 159% of normal precipitation across the Wood and Lost basins. The best monthly precipitation was in the Big Wood with 185% of normal, while the Little Wood had the least with 117%. Water year to date precipitation is 60% of normal in the Little Wood and Big Lost basins, conditions are better in the Big Wood at 74% and Little Lost at 89%. March 1 snowpacks saw dramatic improvements particularly in the Big Wood above Hailey which is now 84% of normal. Last month the Big Wood snowpack was 5th lowest since 1961, now March 1 snowpacks are in the middle historic values having posted the third greatest February increase in snow water on record. The Big Lost and Little Wood snowpacks are still lagging. The Little Wood's snow is 52% of median, 5th lowest since 1961. The Big Lost's snow is 72% of median, 8th lowest since 1961. The Little Lost's snowpack is near normal, up 20% since last month. Reservoir storage ranges from 26-64% of capacity with only Mackay storing a near average amount. Streamflow forecasts are lowest for the two Camas Creeks; at 21% of average for Camas Creek near Blaine and 29% for Camas Creek near Camas. The Big Wood below Magic Dam, Big Lost below Mackay Reservoir and Little Wood are all forecast between 42-54% of average. The Little Lost at 79% of average has the highest forecast. Based on the Surface Water Supply Index, shortages are likely in the Little Lost, Big Wood and Big Lost basins. When combined with reservoir storage only the 10% chance of exceedance forecast will meet demand in these three basins. Another month of snow similar to February is needed in March, followed by above average precipitation through the spring. As winter's days are numbered and no strong climate indicators pointing strongly towards a wet spring, water users would be wise to plan for shortages.

WOOD AND LOST RIVER BASINS
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Big Wood R at Haily (1)	APR-JUL	70	122	153	65	188	265	235
	APR-SEP	77	135	172	65	210	300	265
Big Wood R ab Magic Res	APR-JUL	24	53	80	47	119	175	170
	APR-SEP	24	53	86	47	127	188	182
Camas Ck nr Blaine	APR-JUL	0.82	7.9	16.9	21	29	54	82
	APR-SEP	0.89	8.1	17.2	21	30	54	83
Big Wood R bl Magic Dam (2)	APR-JUL	35	80	120	48	176	260	250
	APR-SEP	32	82	103	39	155	230	265
Little Wood R ab High Five Ck	MAR-JUL	10.8	24	35	45	49	73	77
	MAR-SEP	13.9	27	39	48	53	77	82
	APR-JUL	9.7	21	31	45	43	66	69
Little Wood R near Carey (2)	MAR-JUL	10.3	23	36	42	52	77	86
	MAR-SEP	13.9	27	39	42	53	77	92
	APR-JUL	9.2	21	32	42	46	68	77
Big Lost R at Howell Ranch	APR-JUL	54	80	101	64	123	160	159
	APR-SEP	61	90	114	63	139	182	180
Big Lost R Below Mackay Res	APR-JUL	22	46	66	54	93	132	123
	APR-SEP	26	55	86	57	117	162	150
Little Lost R nr Howe	APR-JUL	12.7	17.9	22	79	26	34	28
	APR-SEP	15.4	22	27	79	33	42	34
Camas Ck at Camas	APR-JUL	0.84	4.5	8.1	29	13.4	24	28

WOOD AND LOST RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Magic	191.5	49.2	22.7	72.5
Little Wood	30.0	14.7	18.8	17.4
Mackay	44.4	28.3	34.5	29.3

WOOD AND LOST RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Big Wood ab Hailey	7	88	84
Camas Creek	5	128	63
Big Wood Basin Total	12	97	77
Fish Creek	2	60	37
Little Wood River	6	63	52
Big Lost River	4	68	70
Little Lost River	3	99	103
Birch-Medicine Lodge Cr	4	111	112
Camas-Beaver Creeks	2	61	59

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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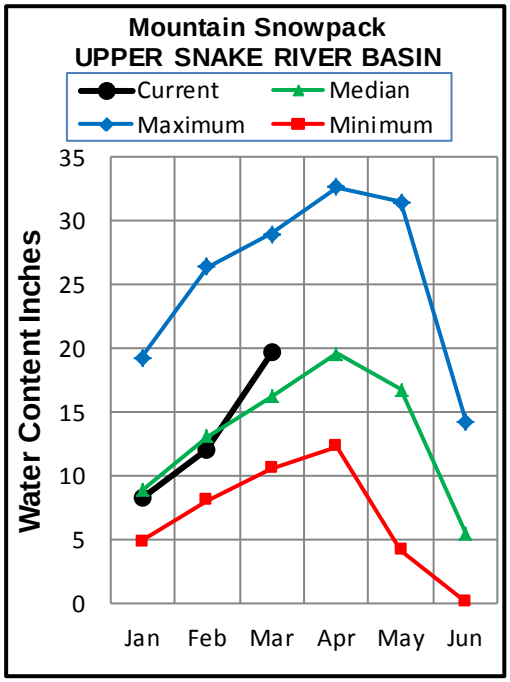
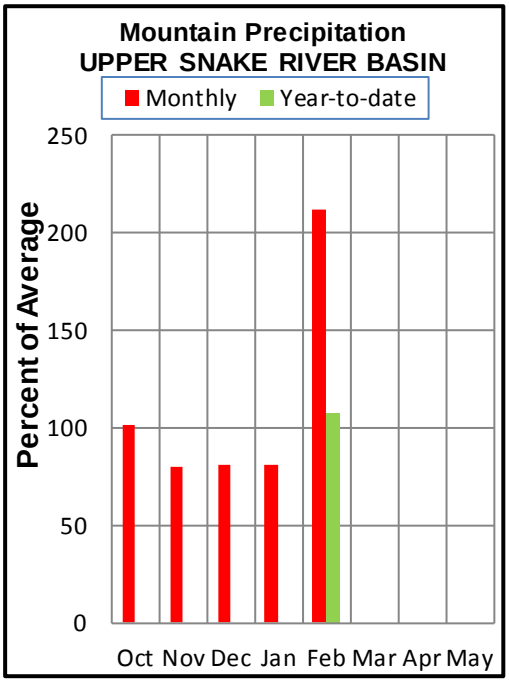
UPPER SNAKE BASIN

MARCH 1, 2014





WATER SUPPLY OUTLOOK

The upper Snake basin received 212% of average precipitation in February. This, in combination with the ample precipitation the area had received through the end of January (relative to other parts of the state) has put the upper Snake at 108% of average water year to date precipitation as of March 1st. Receiving over double average precipitation in February was able to bring basin-wide snowpack levels from below normal to well above. Throughout the month of February the Upper Snake rose from 88% of the 1981 – 2010 median snowpack to 119%. While all sub-basins now have at least near normal snowpacks some have also risen to well above normal. The Greys, Hoback, Salt, and Buffalo Fork River basins all contain very near, or above, 150% of their normal snowpack for March 1st. Current storage varies widely amongst the eight major reservoirs of the upper Snake system but collectively they currently are filled to 51% of capacity and 75% of average. Jackson Lake has the lowest relative storage of any at 26% of capacity and 51% of average. Henry's Lake and Grassy Lake are the closest to capacity at 83 and 90% of capacity, respectively. The number of reservoirs and current storage levels in the upper Snake system, in combination with current snowpack, will likely provide more flexibility in reservoir management than may be possible in other systems connected to Idaho watersheds. Streamflow forecasts throughout the Upper Snake range from a low of 78% of average for the Portneuf to 141% of average for the Salt River. The Snake at Heise is forecast to produce 121% of average April through September streamflow volume. This is a substantial improvement over last month and great news for irrigators who rely on this important forecast and source of water for wise planning and water right issues.

UPPER SNAKE RIVER BASIN
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Henrys Fork nr Ashton (2)	APR-JUL	340	405	450	85	500	575	530
	APR-SEP	485	565	620	87	680	770	710
Henrys Fork nr Rexburg (2)	APR-JUL	1100	1260	1370	98	1480	1640	1400
	APR-SEP	1470	1650	1770	99	1890	2070	1790
Falls R nr Ashton (2)	APR-JUL	270	310	340	93	370	415	365
	APR-SEP	325	370	405	93	440	495	435
Teton R nr Driggs	APR-JUL	137	164	183	119	205	235	154
	APR-SEP	166	200	225	117	250	295	193
Teton R nr St. Anthony	APR-JUL	305	365	410	112	455	530	365
	APR-SEP	370	440	490	113	545	630	435
Snake R at Flagg Ranch	APR-JUL	405	460	495	106	530	585	465
	APR-SEP	440	500	540	106	580	640	510
Snake R nr Moran (1,2)	APR-JUL	665	790	845	110	900	1030	765
	APR-SEP	725	870	935	111	1000	1140	845
Pacific Ck At Moran	APR-JUL	165	192	210	128	230	255	164
	APR-SEP	173	200	220	127	240	265	173
Buffalo Fork ab Lava nr Moran	APR-JUL	280	310	335	120	360	390	280
	APR-SEP	315	355	380	119	405	445	320
Snake R nr Alpine (1,2)	APR-JUL	2030	2370	2530	117	2690	3030	2170
	APR-SEP	2310	2720	2900	116	3080	3490	2500
Greys R nr Alpine	APR-JUL	365	405	430	141	455	495	305
	APR-SEP	420	465	495	138	525	570	360
Salt R nr Etna	APR-JUL	320	390	435	145	480	550	300
	APR-SEP	380	465	520	141	575	660	370
Snake R nr Irwin (1,2)	APR-JUL	3060	3500	3700	123	3900	4340	3010
	APR-SEP	3560	4050	4270	122	4490	4980	3500
Snake R nr Heise (2)	APR-JUL	3400	3730	3950	122	4170	4500	3240
	APR-SEP	3950	4320	4570	121	4820	5190	3780
Willow Ck nr Ririe	MAR-JUL	30	56	73	109	90	116	67
Blackfoot R ab Res nr Henry	APR-JUN	28	43	55	92	68	90	60
Snake R nr Blackfoot (1,2)	APR-JUL	3580	4180	4460	105	4740	5340	4260
	APR-SEP	4340	5080	5420	104	5760	6500	5220
Portneuf R at Topaz	MAR-JUL	43	53	60	79	68	80	76
	MAR-SEP	53	65	73	78	82	96	93
Snake R at Neeley (1,2)	APR-JUL	2030	2850	3220	122	3590	4410	2650
	APR-SEP	2120	3010	3410	121	3810	4700	2810

UPPER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Henrys Lk Nr Lake	90.4	75.4	91.0	80.6
Island Park	135.2	94.1	103.7	104.7
Grassy Lake	15.2	13.7	12.9	12.1
Jackson Lake	847.0	221.8	621.3	434.7
Palisades Res Nr Irwin	1400.	538.6	620.3	925.7
Ririe Lake Nr Ririe	80.5	46.3	46.6	41.2
Blackfoot Res Nr Henry	348.7	163.1	229.4	181.3
American Falls	1672.	1167.	1344.	1296.

UPPER SNAKE RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Henrys Fork-Falls River	9	112	99
Teton River	4	136	112
Henrys Fork above Rexbu	13	118	103
Snake above Jackson Lak	5	135	119
Pacific Creek	2	143	139
Gros Ventre River	3	164	144
Hoback River	5	189	153
Greys River	4	184	154
Salt River	3	177	146
Snake above Palisades	18	161	138
Willow Creek	7	124	91
Blackfoot River	5	134	104
Portneuf River	6	132	94
Snake abv American Fall	36	142	119

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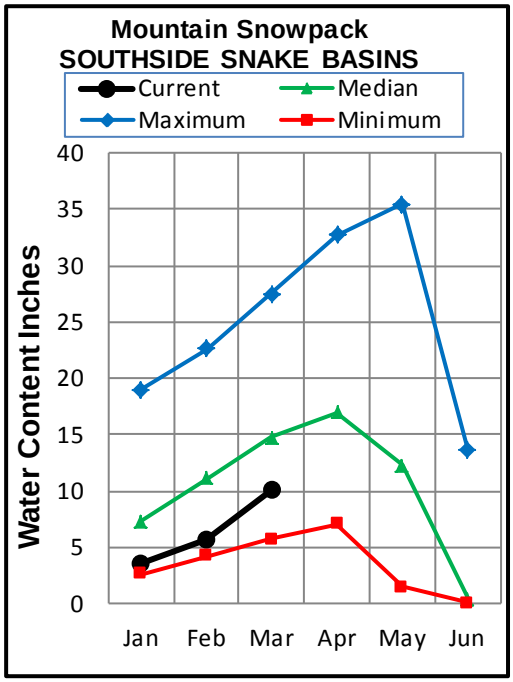
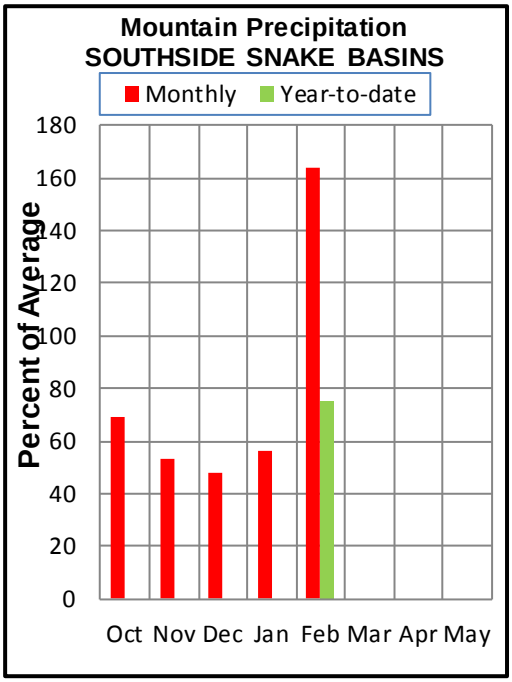
SOUTHSIDE SNAKE RIVER BASINS

MARCH 1, 2014





WATER SUPPLY OUTLOOK

The southside Snake basins had excellent precipitation in February, although depending on elevation much of it came as rain. The Owyhee basin collected 150% of normal precipitation for the month, bringing water year precipitation to 69% of average. Unfortunately more rain than snow fell and some sites. Mud Flat SNOTEL, at 5730 feet elevation, saw its snowpack melt out by early March; the last time Mud Flat was snow free on March 1 was in 1981. Overall the Owyhee snowpack is currently 40% of normal, third lowest since 1976. The Owyhee River near Rome peaked at nearly 3,600 cfs on Feb 16th and without heavy rains it's doubtful a future peak will be higher. Conditions are similar in the Bruneau which had 144% of monthly precipitation in February, and has 71% of normal precipitation for the water year. The Bruneau snowpack is 53% of normal. Like last month the Bruneau snowpack remains 5th lowest since 1961, revealing the above normal precipitation did not boost the snowpack much compared to historic years. The Bruneau River saw a sharp rise mid-month when discharge topped 600 cfs. Salmon Falls and Oakley basins had 168% and 214% of their normal February precipitation amounts respectively. Water year precipitation is now 79% for Salmon Falls and 87% for Oakley. Thanks to taller mountains more of the precipitation fell as snow in the higher elevations. The Salmon Falls snowpack is 67% of median and Oakley 74%. Basin snow indexes going back to 1961 indicate improvement; the Salmon Falls snowpack improved from 7th lowest last month to 11th lowest this month, Oakley increased from 9th lowest to 18th lowest. Reservoir storage remains low. Oakley, Salmon Falls, Wildhorse and Owyhee reservoirs are 11-24% of capacity, which is 32-72% of average. Streamflow forecasts range from 19% of average for the Owyhee River near Rome to 59% and 71% of normal respectively for Goose and Trapper Creeks. Salmon Falls Creek is forecast for just 40% of normal. Water supply concerns remain high. Using the Surface Water Supply Index which combines current reservoir storage with forecasted streamflow, indicates only the 10% chance of exceedance forecast would produce a marginally adequate water supply in Owyhee and Oakley basins. For Salmon Falls even the maximum forecast volume (10% chance of exceedance) will fall far short of an adequate amount due to low reservoir storage. At this point a wet spring is essential to stretch water supplies. Long range forecasts indicate equal chances of this happening, hopefully the current wet pattern persists.

SOUTHSIDE SNAKE RIVER BASINS
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Goose Ck ab Trapper Ck nr Oakley	MAR-JUL	1.43	8.3	13.0	59	17.7	25	22
	MAR-SEP	1.39	8.7	13.7	57	18.7	26	24
Trapper Ck nr Oakley	MAR-JUL	2.6	3.6	4.2	71	4.8	5.8	5.9
	MAR-SEP	3.5	4.5	5.2	73	5.9	6.9	7.1
Oakley Reservoir Inflow	MAR-JUL	4.0	11.9	17.2	61	23	30	28
	MAR-SEP	4.8	13.2	18.9	61	25	33	31
Salmon Falls Ck nr San Jacinto	MAR-JUN	13.7	23	30	39	38	53	77
	MAR-JUL	14.3	24	32	40	41	57	81
	MAR-SEP	15.5	26	34	40	44	60	85
Bruneau R nr Hot Springs	MAR-JUL	47	77	101	49	129	176	205
	MAR-SEP	49	80	106	49	135	184	215
Reynolds Ck at Tollgate	MAR-JUL	0.54	2.9	4.5	51	6.1	8.5	8.8
Owyhee R nr Gold Ck (2)	MAR-JUL	3.1	5.5	7.8	28	10.6	15.9	28
	MAR-SEP	2.5	4.4	6.2	23	8.4	12.4	27
	APR-JUL	0.50	2.1	4.1	19	7.2	13.9	22
Owyhee R nr Rome	MAR-JUL	26	72	100	19	189	320	515
	MAR-SEP	26	74	111	21	200	335	530
	APR-SEP	14.6	44	104	28	189	315	365
Owyhee R bl Owyhee Dam (2)	MAR-JUL	33	78	120	22	171	260	555
	MAR-SEP	49	99	144	25	197	290	585
	APR-SEP	41	91	136	34	190	285	405

SOUTHSIDE SNAKE RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Oakley Reservoir Near Oakley	75.6	18.3	22.2	25.3
Salmon Falls Reservoir	182.6	20.1	32.6	47.1
Wild Horse Re Nr Gold Creek	71.5	14.5	25.7	34.5
Lake Owyhee Near Nyssa	715.0	127.0	303.6	392.6
Brownlee	1420.	1347.	1113.	1129.

SOUTHSIDE SNAKE RIVER BASINS
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Raft River	6	86	71
Goose-Trapper Creeks	6	88	74
Salmon Falls Creek	6	72	72
Bruneau River	6	62	56
Reynolds Creek	6	94	60
Owyhee Basin Total	9	57	40
Owyhee Basin SNOTEL	7	62	46

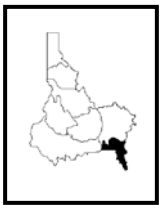
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

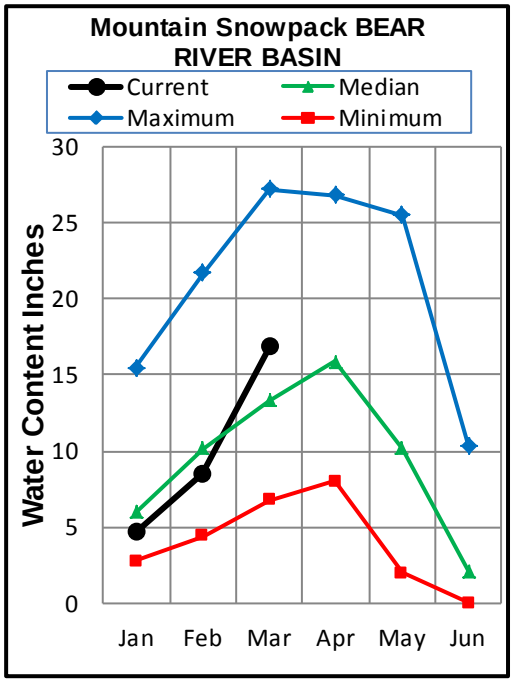
The average is computed for the 1981-2010 base period.

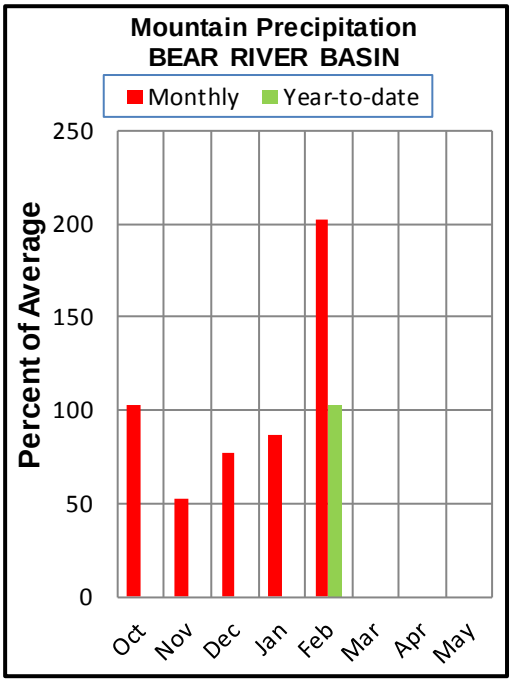
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

BEAR RIVER BASIN

MARCH 1, 2014







WATER SUPPLY OUTLOOK

Last month we optimistically wrote “The Bear’s snowpack is within striking distance of normal if an active weather pattern returns”. Turns out a massive February made this prediction true. Monthly precipitation in February was twice normal. Spring Creek Divide and Giveout SNOTEL sites recorded over three times their normal monthly amounts. Both March 1 water year to date precipitation and snow water measurements have rebounded back to normal. The increase in snow water measured this February was the 2nd greatest on record based on records back to 1975. The largest February occurred in 1986; comparing the two years shows the 15 SNOTEL sites above the Idaho-Utah border gained on average 7.6 inches of snow water this past month, while in February 1986 the same sites posted average snow water gains just over 13 inches, nearly twice as much! The highest snowpack numbers are found in the Smiths and Thomas Forks drainages at 149% of normal; Montpelier Creek at 125% of normal is also well above normal. The Malad basin at 79% of normal is the only area with below normal snow. Streamflow forecasts in the Bear headwaters have improved to 95% of normal for the Bear River near Woodruff and for the Smiths Fork. The forecast for the Bear River below Stewart Dam improved dramatically to 115,000 acre-feet or 56% of average for the April-September period based on the 50% chance of exceedance forecast; this marks an increase of 53,000 acre-feet over last month’s forecast. If that forecast holds expect volumes similar to 2010, a year when Bear Lake storage was down only slightly by the end of the irrigation season. If conditions remain wet, a volume of 169,000 acre-feet is possible based on the 30% chance of exceedance forecast. Such a volume is similar to 2006, a year when carryover storage increased. However, the past two years of well below normal moisture and runoff, and lingering drought effects may limit the efficiency of this year’s snowmelt to produce better runoff without spring rains. In terms of water supply, users without Bear Lake water storage rights should plan on better runoff than the past two years; based on this year’s forecast and snow levels. 2005 or 2008 are good comparison years. Considering the snow added during the first week of March, Bear River basin has already reached its normal seasonal peak amount. This will help to ensure better runoff considering there are still three more weeks before the peak snow water content level are generally reached.

BEAR RIVER BASIN
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bear R nr UT-WY State Line	APR-JUL	73	92	105	94	118	137	112
	APR-SEP	78	100	115	93	130	152	123
Bear R ab Res nr Woodruff	APR-JUL	68	96	115	95	134	162	121
	APR-SEP	72	100	120	94	140	168	128
Big Ck nr Randolph	APR-JUL	1.05	2.2	3.0	79	3.8	5.0	3.8
Smiths Fk nr Border	APR-JUL	75	91	85	96	113	129	89
	APR-SEP	89	107	100	96	133	151	104
Bear R bl Stewart Dam	MAR-JUL	4.1	57	107	52	157	231	205
	MAR-SEP	6.9	63	120	52	177	261	230
	APR-JUL	1.83	53	100	55	147	216	183
	APR-SEP	4.1	61	115	56	169	248	205
Little Bear R at Paradise	APR-JUL	10.4	23	32	78	41	54	41
Logan R nr Logan	APR-JUL	62	81	94	85	107	126	111
Blacksmith Fork nr Hyrum	APR-JUL	15.9	30	40	93	50	64	43

BEAR RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
Bear Lake	1421.	679.6	783.2	594.1
Montpelier Ck Res	4.0	1.4	1.5	1.8

BEAR RIVER BASIN
Watershed Snowpack Analysis - March 1, 2014

Watershed	Number of Data Sites	This Year as % of Last Yr	Median
Smiths & Thomas Forks	3	180	147
Bear River ab WY-ID lin	3	180	147
Montpelier Creek	2	171	125
Mink Creek	4	144	103
Cub River	3	112	86
Bear River ab ID-UT lin	16	144	111
Malad River	1	122	97

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

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 Dec 2011).**

Panhandle River Basins

Kootenai R at Leonia, MT
+ Lake Koocanusa storage change

Moyie R at Eastport – no corrections

Smith Creek nr Porthill – no corrections

Boundary Ck nr Porthill – no corrections

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

Pend Oreille Lake Inflow
+ Pend Oreille R at Newport, WA
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Rapids storage change
+ Pend Oreille Lake storage change
+ Priest Lake storage change

Priest R nr Priest R
+ 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
+ Coeur d'Alene Lake storage change

Spokane R at Long Lake, WA
+ Coeur d'Alene Lake 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
+ Clearwater R nr Peck
- Clearwater R at Orofino
+ Dworshak Res storage change

Clearwater R at Orofino - no corrections

Clearwater R at Spalding
+ 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

Weiser, Payette, Boise River Basins

Weiser R nr Weiser - no corrections

SF Payette R at Lowman - no corrections

Deadwood Res Inflow
+ Deadwood R bl Deadwood Res nr Lowman
+ Deadwood Res storage change

Lake Fork Payette R nr McCall – no corrections

NF Payette R at Cascade
+ Cascade Res storage change
+ Payette Lake storage change

NF Payette R nr Banks
+ Cascade Res storage change
+ Payette Lake storage change

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

Boise R nr Twin Springs - no corrections

SF Boise R at Anderson Ranch Dam
+ Anderson Ranch Res storage change

Mores Ck nr Arrowrock Dam – no corrections

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

Wood and Lost River Basins

Big Wood R at Hailey - no corrections

Big Wood R ab Magic Res
+ Big Wood R at Stanton Crossing nr Bellevue
+ Willow Ck

Camas Ck nr Blaine – no corrections

Big Wood R bl Magic Dam nr Richfield
+ Magic Res storage change

Little Wood R ab High Five Ck – no corrections

Little Wood R nr Carey
+ Little Wood Res storage change

Big Lost R at Howell Ranch - no corrections

Big Lost R bl Mackay Res nr Mackay
+ Mackay Res storage change

Little Lost R bl Wet Ck nr Howe - no corrections

Upper Snake River Basin

Henrys Fork nr Ashton
+ Henrys Lake storage change
+ Island Park Res storage change

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

Teton R nr Driggs - no corrections

Teton R nr St. Anthony
- 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
+ Henrys Lake storage change
+ Island Park Res storage change
+ Grassy Lake storage change
+ 7 Diversions from Henrys Fk btw Ashton to St. Anthony
+ 21 Diversions from Henrys Fk btw St. Anthony to Rexburg
+ 3 Diversions from Falls R ab Ashton
+ 6 Diversions from Falls R nr Ashton to Chester
Snake R nr Flagg Ranch, WY – no corrections
Snake R nr Moran, WY
+ Jackson Lake storage change
Pacific Ck at Moran, WY - no corrections
Buffalo Fork ab Lava nr Moran, WY - no corrections
Gros Ventre R at Kelly, WY - no corrections
Snake R ab Res nr Alpine, WY
+ Jackson Lake storage change
Greys R nr Alpine, WY - no corrections
Salt R R nr Etna, WY - no corrections
Snake R nr Irwin
+ Jackson Lake storage change
+ Palisades Res storage change
Snake R nr Heise
+ Jackson Lake storage change
+ Palisades Res storage change
Willow Ck nr Ririe
+ Ririe Res storage change
The forecasted natural volume for Willow Creek nr Ririe does not include an adjustment for Grays Lake water diverted from Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Blackfoot R ab Res nr Henry
+ 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
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
+ Wildhorse Res storage change
Owyhee R nr Rome, OR – no Corrections
Owyhee R bl Owyhee Dam, OR
+ Owyhee Res 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 nr Montpelier
+ 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 these 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 inactive storage. **(Revised Dec 2011)**

Basin/ 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 Rapids	Unknown	---	335.00	---	335.0	Active
Pend Oreille	406.20	112.40	1042.70	---	1561.3	Dead + Inactive + Active
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
Weiser/Boise/Payette Basins						
Mann Creek	1.61	0.24	11.10	---	11.1	Active
Cascade	Unknown	46.70	646.50	---	693.2	Inactive + Active
Deadwood	Unknown	---	161.90	---	161.9	Active
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
Wood/Lost Basins						
Magic	Unknown	---	191.50	---	191.5	Active
Little Wood	Unknown	---	30.00	---	30.0	Active
Mackay	0.13	---	44.37	---	44.4	Active
Upper Snake Basin						
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
Jackson Lake	Unknown	---	847.00	---	847.0	Active
Palisades	44.10	155.50	1200.00	---	1400.0	Dead + Inactive+Active
Ririe	4.00	6.00	80.54	10.00	80.5	Active
Blackfoot	Unknown	---	348.73	---	348.7	Active
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
Wildhorse	Unknown	---	71.50	---	71.5	Active
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	---	1421.0 includes 119	Active + Inactive: that can be released
Montpelier Creek	0.21	---	3.84	---	4.0	Dead + Active

Interpreting Water Supply Forecasts

Introduction
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.

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.

Using the forecasts - an Example
Using the 50 Percent Exceedance Forecast. Using the example forecasts shown below, there is a 50% chance that actual streamflow volume at the Boise River near Twin Springs will be less than 685 KAF between April 1 and July 31. There is also a 50% chance that actual streamflow volume will be greater than 685 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 610 KAF (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 610 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 443 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 443 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 760 KAF (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 760 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 927 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 927 KAF.

Users could also choose a volume in between any of these values to reflect their desired risk level.

Weiser, Payette, Boise River Basins
Streamflow Forecasts – January 2006

Forecast Point	Forecast Period	Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000 AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF PAYETTE RIVER at Lowman	APR-JUL	329	414	471	109	528	613	432
	APR-SEP	369	459	521	107	583	673	488
BOISE RIVER near Twin Springs (1)	APR-JUL	443	610	685	109	760	927	631
	APR-SEP	495	670	750	109	830	1005	690

*90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table

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
Jeff Burwell, State Conservationist
Hal Swenson, 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
Jeff Anderson, Hydrologist
Karl Wetlaufer, Hydrologist
Jeff Graham, Electronics Technician
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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