

*Natural Resources Conservation Service*

# Idaho Water Supply Outlook Report

## May 1, 2014



The calendar said April 29 but the snowpack in north Idaho's Lochsa River basin shows winter has not loosened its grip. Numerous storms provided the Clearwater basin with 120% of the normal April precipitation, the third straight month with well above average amounts. The already deep snowpack continued to increase and is now at its peak for the season. NRCS Hydrologist Karl Wetlaufer and Lynn Reese from US Army Corps of Engineers measured 11 feet of snow depth with 57.4 inches of water content, the second highest May measurement since records began in 1955, at the Fish Lake Airstrip snow course in the Selway-Bitterroot Wilderness.

The deep snowpack in this region foretell a plentiful runoff season to come. River runners heading to the Selway and Lochsa this summer can expect some of the biggest whitewater in years! The streamflow volume forecast for the May – July period is currently 145 to 150% of average, highest in the state!

Other areas across central, southern and eastern Idaho experienced a range of conditions in April but only the upper Snake region had above normal precipitation. Read our full report for all the details.

# 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](mailto: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.

---

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers. If you believe you experienced discrimination when obtaining services from USDA, participating in a USDA program, or participating in a program that receives financial assistance from USDA, you may file a complaint with USDA. Information about how to file a discrimination complaint is available from the Office of the Assistant Secretary for Civil Rights. USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex (including gender identity and expression), marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, complete, sign, and mail a program discrimination complaint form, available at any USDA office location or online at [www.ascr.usda.gov](http://www.ascr.usda.gov), or write to: USDA, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410.

Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender. Persons with disabilities who require alternative means for communication of program information (e.g. Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

# **IDAHO WATER SUPPLY OUTLOOK REPORT**

## **May 1, 2014**

### **SUMMARY**

If you like variability, you like Idaho this year and this month's report. Where to start? Concerns about droughts across Idaho from the Owyhee to the Oakley basin and into central Idaho and flood concerns of too much water in the Clearwater and Upper Snake basins while a few basins, like the Boise, will have just the right amount. Peak streamflows have occurred in the Owyhee River and Camas Creek and other lower elevation basins. Snowmelt streamflow peaks will happen in next few days in Salmon Falls Creek while the Big Lost River is not too far off. In the higher elevations of the Boise, Payette, Panhandle Region, Clearwater and Upper Snake, SNOTEL sites are just now reaching their peak snow water amounts with the snowpack going isothermal and starting to melt. These northern Idaho, Clearwater and Upper Snake rivers will be high for the next few months and flowing above average the rest of summer. In contrast, Idaho's southern desert rivers that normally would be peaking now are flowing at near record low levels. For example, the average flow for the Owyhee River near Rome in early May is about 2,000 cfs, and the current flow is less than 200 cfs.

### **SNOWPACK**

Lessons learned this year – the lack of snow or thin snowpacks in Idaho's mid-elevations are taking its toll and not producing much streamflow. Combined with slightly warmer than normal temperatures across most of the state last month and most of the winter, these mid-elevation sites are gradually melting with minimal response in streamflow. For example, Morgan Creek at 7,600 feet and 25 miles north of Challis, just melted out. It is not uncommon for this site to melt out by May 7 as it has 12 out of 33 years. What is uncommon is for this site to melt the entire snowpack in 30 days. It went from 11.5 inches of SWE to zero in this 30 day window. Only one other year, 1985, had this much snow melt in this 30 day window. A similar scenario was mentioned in the March Water Supply Report when Mud Flat in the Owyhee basin melted out on March 1, the earliest since 1981. The end result is that these melt rates were not great enough to produce much streamflow when combined with the below normal precipitation across the southern half of Idaho and moderate April temperatures.

Two storm fronts in late April and early May were key in adding a little moisture to the pack but also in delaying the melt. This helped to push the melt out a few weeks rather than having the snowpack continue melting on the early side. In contrast, in the higher elevations, it will be several weeks until snowmelt is in full swing in the Clearwater and Upper Snake basins where the snowpack is currently 140-180% of normal.

## **PRECIPITATION**

Cool, wet weather in April continued across northern Idaho with the Northern Panhandle Region receiving 141% of normal precipitation, Spokane basin received 135% and the Clearwater basin received 120%. Near normal amounts fell in the Weiser, Payette, eastern Idaho, Upper Snake and Oakley basins. Elsewhere, basins that still needed more moisture only got 65-75% of normal April precipitation, including Big and Little Wood, Big and Little Lost, Mud Lake, Bear, Bruneau and Owyhee basins while about 85% of normal amounts fell in the Salmon, Boise and Salmon Falls basins.

Precipitation since the water year started October 1 varies across the state. The Upper Snake basin has the highest percentages at 115% of average for the Henrys Fork, Teton and Upper Snake basins in western Wyoming. Basins that received near normal amounts so far include Panhandle, Clearwater, Salmon, Payette, Boise, Oakley and Bear. The least amount that has fallen since October first ranges from 72 to 89% of average and are listed here from lowest to highest: Little Wood, Big Lost, Bruneau, Owyhee, Big Wood, Weiser, Mud Lake, Salmon Falls and Little Lost basins. Keep in mind, water year to date precipitation normals are a percent of average compared to the 1981-2010 period while the snow water equivalent normals are a percentage of median for the same period.

## **RESERVOIRS**

Reservoir storage varies across the state just like this year's snowpack. Owyhee Reservoir has already peaked in terms of storage for the season and is currently 26% of capacity, 35% average with near minimal inflows. Salmon Falls Reservoir is near its peak storage with inflows less than 200 cfs and irrigation releases starting soon; current storage is 20% full, which is only half of average. Magic Reservoir is half full and will have a short irrigation season. Little Wood and Mackay reservoirs are 80% full, but will also have short supplies for its users. The Boise reservoir system is 72% full but it is still questionable if Anderson Ranch Reservoir will fill or not. The Payette reservoir system is 80% full, 112% of average. Dworshak Reservoir is just over half full and will have plenty of snowmelt runoff to top it off in early to mid- June. Jackson Lake and Palisades Reservoir are on schedule to fill after the snowmelt peaks have occurred. American Falls Reservoir is nearly full along with Henrys Lake, Island Park and Grassy Lake. Blackfoot Reservoir is 58% full which is just under average for this time of year. Carryover storage for next year will vary from minimal amounts in the Wood, Lost and Southside basins to better than this year in the Upper Snake. Exact carryover amount is a function of summer temperatures and precipitation which dictates demand and when the first fall frost occurs. Keep in mind, with El Nino conditions brewing in the Pacific Ocean already, sometimes fall storms come earlier in El Nino years.

Speaking of El Nino conditions, water users and water managers should be aware that ENSO models are suggesting at least a moderate El Nino for 2015. El Nino relationships with precipitation during our dry summer months are relatively absent. El Ninos typically bring below normal snowfall to the Pacific Northwest but each one sets up differently. Users may wish to review and consider impacts of strong El Nino years in their basin and if opportunities exist to carryover additional reservoir storage as a precautionary measure if El Nino conditions occur. Users can view the Idaho Surface Water Supply Index (SWSI) to refresh their memory about resulting streamflow for past El Nino and Strong El Nino years and the SOI correlation map below with streamflow. Occasionally southern Idaho sees the impact from a stronger southern jet stream, this has resulted in normal or better runoff three out of five strong El Nino years for the Salmon Falls tract users.

[Surface Water Supply Index \(SWSI\)](#) and [Southern Oscillation Index Statistical Correlation with Spring Runoff in the Western US](#)

## **STREAMFLOW**

Back to back months with above normal precipitation in February and March is what made our winter across most of Idaho. While some basins along the edge benefited greatly from the storm track along the continental divide (Pend Oreille, Clearwater and Upper Snake), other basins stretching from the Owyhee and Bruneau basins across south central Idaho to the Big and Little Lost basins missed the southern storm track and moisture coming up from California.

Current streamflow forecasts call for 135-155% of average May-July volumes in pockets of the Panhandle Region, Clearwater and Upper Snake tributaries in western Wyoming. The lowest ones are less than 50% of average in the Big Wood, Little Wood, Big Lost, Camas, Salmon Falls, Bruneau and Owyhee drainages. These are based on the 50% Chance of Exceedance Forecast, however, water managers may want to continue to adjust their thinking and risk level based on the current weather trends in their basins. For the basins with plentiful snowfall, more moderate temperatures are needed to gradually melt more snow in the next couple of weeks to reduce the snow covered area that can still contribute and melt rapidly. Then, how the remaining snow comes off depends on spring temperatures and precipitation and the closer we get to mid and late May, the greater the chance for those hot temperatures to occur. Hang on; we may not be done with this rollercoaster weather ride and the increase in climate variability weather we saw this season that keeps our job as hydrologists, forecasters and water managers interesting each year. If the weather was even close to normal it would make water management and planning decisions much easier.

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**

Flows for spring and summer river running will vary widely throughout Idaho. Due to a low snowpack and mid-winter rains it appears as though the rafting season on the Bruneau and Owyhee rivers has already come and gone. On the opposite end of the spectrum, and the state, the Lochsa and Selway basins have continued to collect high elevation snow throughout April. The May 1st snowpack in both of these basins was over 180% of normal and will likely be experiencing very high flows over the coming weeks and months as the snowpack melts. The MF Salmon is currently forecasted to produce 110% of average seasonal volume. While the timing and magnitude of peak streamflow, for all snowmelt dominated basins, depends on spring temperature and precipitation, the Middle Fork often peaks near the time the Banner Summit SNOTEL site is half melted. All of the forks of the Payette River are currently forecasted to have near normal seasonal flows, again, with the peak depending on spring weather. One common trend seen in the snowpack throughout the state is less mid-elevation snow compared to high elevation snow. It is difficult to estimate exactly how this will affect runoff timing, but it will likely result in a different hydrograph than would be seen in years with a more normal distribution of snow. Only time will tell. As always, be careful and know your limits until the streams subside to your boating skills.

On the note of high elevation snowpacks, bear in mind that this can have an impact on land based recreation as well. With above normal snow at so many high elevation sites, many mountain roads and trails are likely to remain snow covered and inaccessible longer than users are used to. Additionally, stream crossings will likely remain high longer than normal and should be approached with caution, as even small streams can become deceptively powerful at high flows. That being said, much of southern Idaho is already snow free and ready to provide a variety of spring recreation opportunities. Be safe and have fun!

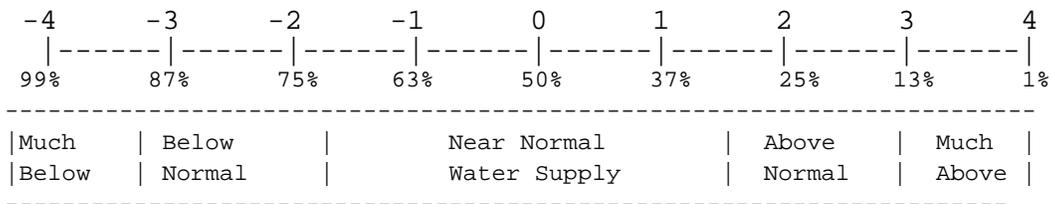
# IDAHO SURFACE WATER SUPPLY INDEX (SWSI)      May 1, 2014

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.

<i><b>BASIN or REGION</b></i>	<i><b>SWSI Value</b></i>	<i><b>Most Recent Year With Similar SWSI Value</b></i>	<i><b>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</b></i>
Northern Panhandle	1.1	2013	NA
Spokane	2.3	1990	NA
Clearwater	2.6	2002	NA
Salmon	-0.1	2010	NA
Weiser	-0.4	2009	NA
Payette	-0.4	2009	NA
Boise	-0.1	2010	-2.2
Big Wood	-1.8	2003	0.0
Little Wood	-2.3	2013	-2.0
Big Lost	-2.1	2003	-0.2
Little Lost	-1.3	2000	1.2
Teton	3.5	2011	-3.9
Henry's Fork	1.3	2006	-3.4
Snake (Heise)	1.6	2009	-1.5
Oakley	-1.6	2013	0.0
Salmon Falls	-3.3	2003	-1.0
Bruneau	-1.6	1994	NA
Owyhee	-3.8	1992/2003/1988	-3.2
Bear River	0.6	2013	-3.4

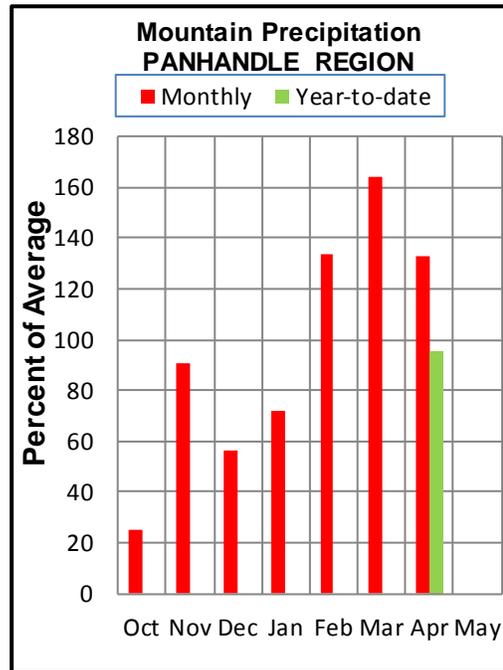
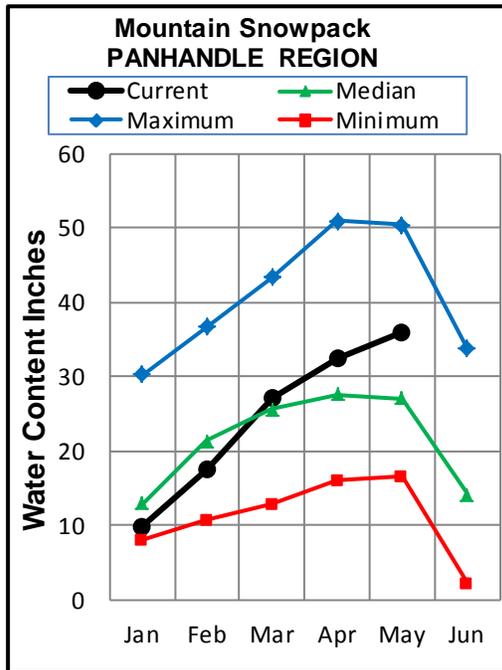
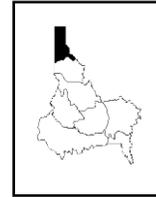
### **SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION**



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.

# PANHANDLE REGION

MAY 1, 2014



## WATER SUPPLY OUTLOOK

For the third month in a row the Panhandle Region received well above normal monthly precipitation, with April receiving 133% of average precipitation. As of May 1st the region is at 95% of average water year to date precipitation. Precipitation received at individual SNOTEL sites throughout the Panhandle varied widely with Lookout receiving the 95% of normal and Ragged Mountain receiving 200% of normal amounts. Snowpacks in the region generally reflect the consistent precipitation of the past few months. With the exception of Rathdrum Creek and the Palouse, all basins in the Panhandle are still maintaining above normal snowpacks. Most notable are the Pend Orielle and Coeur d'Alene at 155% and 142% of normal, respectively. All reservoirs in the Panhandle Region gained water since the end of March. Coeur d'Alene Lake is full and 105% of average. Pend Orielle Lake is holding 54% of capacity and 91% of average and ready for the 139% of average runoff expected. Priest Lake rose to 80% of capacity which is 94% of average storage. There will be plenty of water this summer. Priest River hosts the lowest streamflow forecast at 98% of average while the others in this region are 110-140% of average. Flows will be high from the rivers coming in from Montana namely the Clark Fork that drains the Bitterroot Valley and along the west side of the continental divide where the jet stream deposited snow all winter. The Kootenai River is forecast at 114% of average and has been flowing at 30,000 cfs at the Leonia gage for over 35 days.

PANHANDLE REGION  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Kootenai R at Leonia (1,2)	MAY-JUL	5190	6110	6530	114	6950	7870	5730
	MAY-SEP	6280	7150	7540	112	7930	8800	6730
Moyie R at Eastport	MAY-JUL	285	325	355	118	385	425	300
	MAY-SEP	295	340	370	117	400	445	315
Boundary Ck nr Porthill	MAY-JUL	82	95	104	108	113	126	96
	MAY-SEP	87	101	110	109	119	133	101
Clark Fork at Whitehorse Rpds (1,2)	MAY-JUL	10400	11600	12200	140	12800	14000	8740
	MAY-SEP	11400	12800	13500	138	14200	15600	9760
Pend Oreille Lake Inflow (2)	MAY-JUL	11900	12900	13500	139	14100	15100	9690
	MAY-SEP	13100	14200	14900	139	15600	16700	10700
Priest R nr Priest River (1,2)	MAY-JUL	425	525	570	98	615	715	580
	MAY-SEP	450	565	615	98	665	780	630
NF Coeur d'Alene R at Enaville	MAY-JUL	315	430	505	125	580	695	405
	MAY-SEP	350	465	545	122	625	740	445
St. Joe R at Calder	MAY-JUL	840	940	1010	132	1080	1180	765
	MAY-SEP	915	1020	1090	131	1160	1260	830
Spokane R nr Post Falls (2)	MAY-JUL	1500	1780	1960	128	2140	2420	1530
	MAY-SEP	1580	1880	2080	128	2280	2580	1620
Spokane R at Long Lake (2)	MAY-JUL	1680	2010	2230	130	2450	2780	1710
	MAY-SEP	1910	2250	2490	128	2730	3070	1950

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

PANHANDLE REGION  
Watershed Snowpack Analysis - May 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Hungry Horse Lake	3451.	2091.	2690.	2188.	Kootenai ab Bonners Fer	11	125	142
Flathead Lake	1791.	1101.	999.1	971.5	Moyie River	1	107	120
Noxon Rapids Res	335.0	318.9	310.8	307.4	Priest River	3	102	122
Pend Oreille	1561.	846.5	936.3	931.7	Pend Oreille River	58	146	155
Coeur D'alene	238.5	238.6	199.3	228.0	Rathdrum Creek	1	147	74
Priest Lake Nr Coolin	119.3	95.9	93.1	101.9	Coeur d'Alene River	6	135	142
					St. Joe River	3	143	137
					Spokane River	10	139	135
					Palouse River	1	18	16

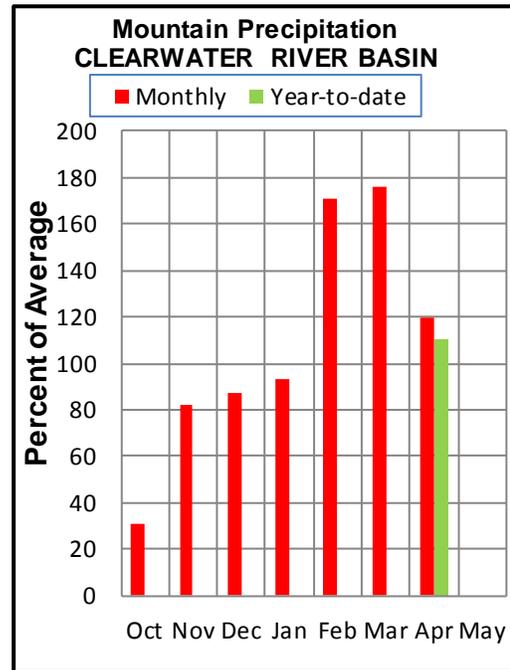
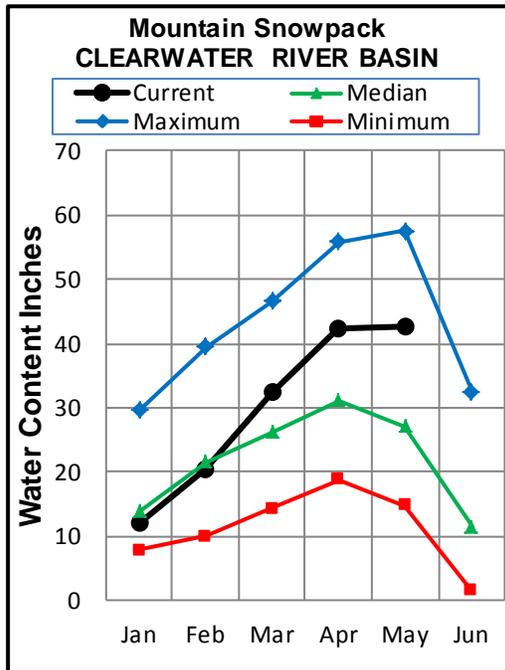
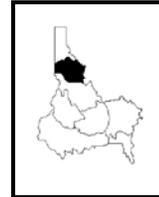
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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

MAY 1, 2014



## WATER SUPPLY OUTLOOK

Similar to the previous two months, April precipitation in the Clearwater continued to be well above average, receiving 120% of normal precipitation. The Lost Lake SNOTEL site, in the northernmost portion of the basin, received the largest amount at 8.7 inches of moisture, 145% of normal. Water year to date precipitation in the Clearwater is 110% of average. The snowpack continued to gain throughout April and the basin total is now at 158% of normal. The Lochsa and Selway basins in particular had substantial gains over the past month and are now both over 180% of the normal snowpack for May 1. The Selway snowpack is the highest since 1997. Watch out when this snow melts, depending on temperatures the streams could go big, but we do know that they will be high for an extended period of time. Storage in Dworshak Reservoir dropped from last month in preparation for the upcoming snowmelt runoff and now is 71% of average, 54% of capacity. Dworshak Reservoir inflow is forecast at 122% of average the lowest in the region. Clearwater River at Orofino, the Selway and Lochsa rivers are forecast at 145-150% of average. There will be plenty of whitewater opportunities this summer after the rivers peak and subside to safer boating levels. Know your safe boating limits. Keep an eye on the spring weather and snowmelt rates which are the keys to produce and maintain high streamflow levels.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - April 1, 2014

CLEARWATER RIVER BASIN  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>					30-Yr Avg. (1000AF)	
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)		10% (1000AF)
Selway R nr Lowell	MAY-JUL	2040	2180	2280	145	2380	2520	1570
	MAY-SEP	2120	2290	2400	144	2510	2680	1670
Lochsa R nr Lowell	MAY-JUL	1560	1650	1710	151	1770	1860	1130
	MAY-SEP	1640	1740	1810	150	1880	1980	1210
Dworshak Res Inflow	MAY-JUL	1700	2020	2160	122	2300	2620	1770
	MAY-SEP	1830	2170	2330	121	2490	2830	1920
Clearwater R at Orofino (1)	MAY-JUL	4170	4690	4920	145	5150	5670	3400
	MAY-SEP	4410	4960	5210	144	5460	6010	3630
Clearwater R at Spalding (1,2)	MAY-JUL	5970	6770	7130	136	7490	8290	5260
	MAY-SEP	6340	7200	7590	135	7980	8840	5640

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

CLEARWATER RIVER BASIN  
Watershed Snowpack Analysis - May 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Dworshak	3468.	1888.	2868.	2646.	North Fork Clearwater	8	150	149
					Lochsa River	2	176	185
					Selway River	4	178	188
					Clearwater Basin Total	14	155	156

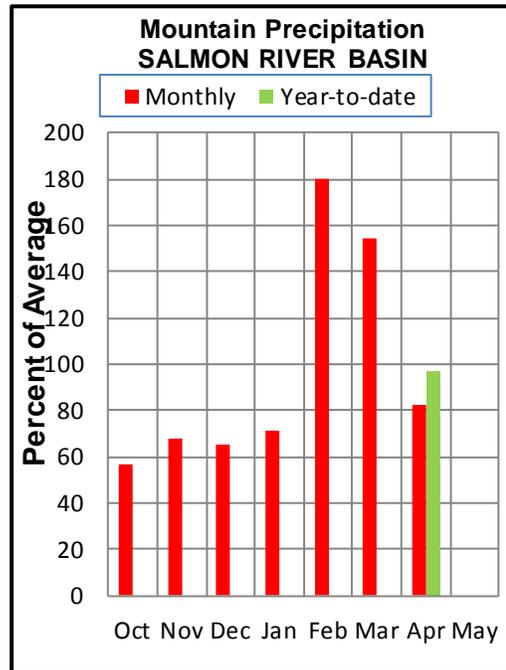
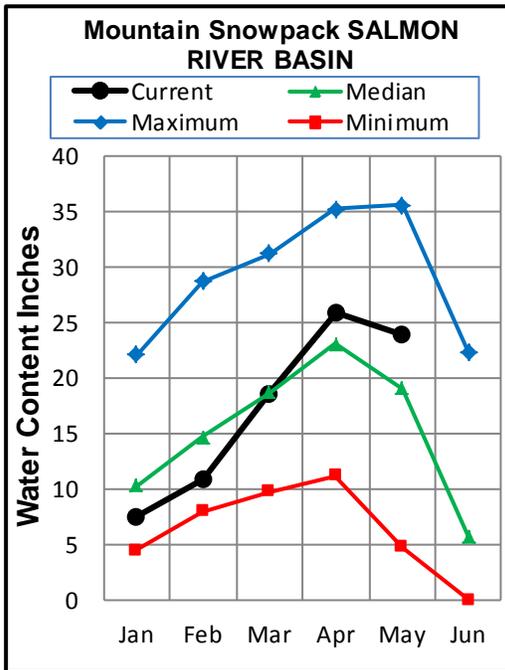
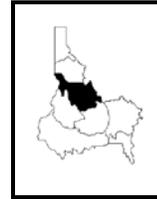
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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

MAY 1, 2014



## WATER SUPPLY OUTLOOK

The trend of above average monthly precipitation of February and March did not continue in April for the Salmon basin; overall the basin received 82% of normal April precipitation. Even with the below average precipitation in April water year to date precipitation is very near average, at 97% of normal. Snowpack for the basin as a whole was 128% of normal on May 1st. Snowpack levels do not vary widely between sub-basins in the Salmon with a low of 117% of normal in the South Fork Salmon and a high of 133% in the Little Salmon. Overall, streamflow forecasts in the Salmon basin are for near normal volumes, and percentages did not change substantially from the April 1st forecast. The exception to this is the Lemhi which is notably lower than the other sub-basins, and is forecasted at 82%. The MF Salmon has the highest forecast in the basin, at 110% of average, which is good news for those hoping for a long river running season on the Middle Fork while the Main Salmon River at White Bird is forecast at 102% and will provide a long and ideal rafting season.

SALMON RIVER BASIN  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Salmon R at Salmon (1)	MAY-JUL	460	595	655	96	715	850	680
	MAY-SEP	540	705	780	97	855	1020	805
Lemhi R nr Lemhi	MAY-JUL	32	42	50	82	58	72	61
	MAY-SEP	41	53	61	80	70	85	76
MF Salmon R at MF Lodge	MAY-JUL	505	595	660	110	725	815	600
	MAY-SEP	560	670	745	110	820	930	675
SF Salmon R nr Krassel RS	MAY-JUL	183	210	230	102	250	275	225
	MAY-SEP	200	230	245	100	260	290	245
Johnson Ck at Yellow Pine	MAY-JUL	124	145	159	92	173	194	172
	MAY-SEP	134	156	171	93	186	210	184
Salmon R at White Bird (1)	MAY-JUL	3580	4400	4770	102	5140	5960	4660
	MAY-SEP	3990	4930	5350	102	5770	6710	5220

SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of April					SALMON RIVER BASIN Watershed Snowpack Analysis - May 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					Salmon River ab Salmon	7	139	117
					Lemhi River	5	138	129
					Middle Fork Salmon Rive	3	135	120
					South Fork Salmon River	3	135	117
					Little Salmon River	3	192	133
					Salmon Basin Total	21	147	127

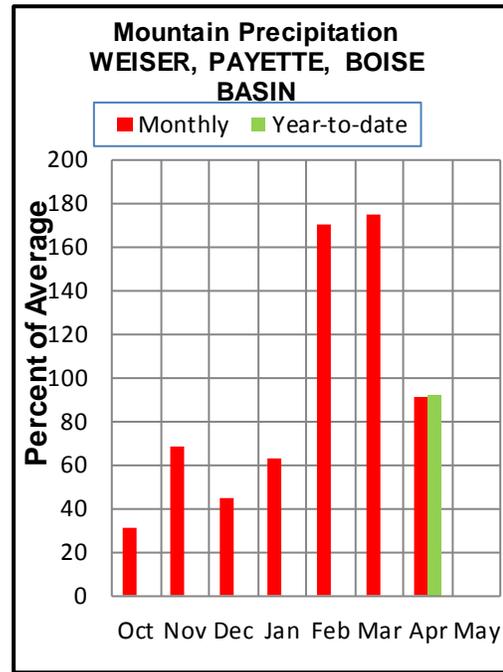
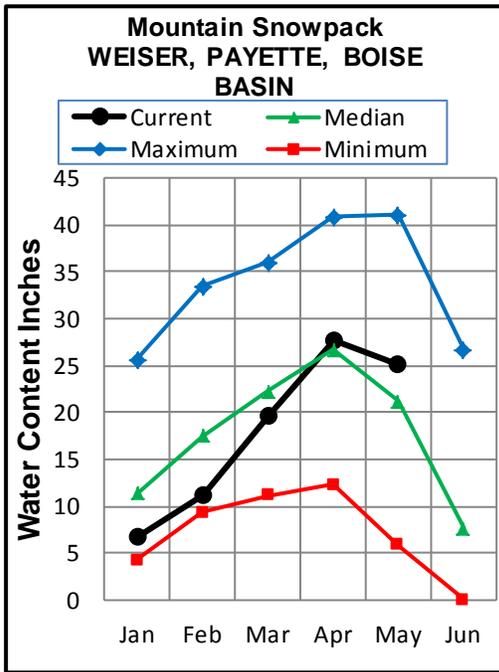
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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

MAY 1, 2014



## WATER SUPPLY OUTLOOK

The west-central mountains of Idaho received 91% of normal precipitation in April, leaving the area at a very similar value for water year to date totals, 92%. While there were many individual sites in this region that received above average precipitation none were substantially above average, particularly compared with the previous two big months. The Van Wyck SNOTEL site received the highest amount at 114%. The Payette and Boise basin snowpacks are 114% of median. Snowpack in the Weiser basin is slightly less with normal amounts. The SF Payette has the largest snowpack, relative to normal, in the region at 119%. The Payette reservoir system is 80% full, 112% of average and will fill after the snowmelt streamflow peaks occur. Lucky Peak and Arrowrock reservoirs are about 85% full and are holding steady until more snow melts. Anderson Ranch Reservoir at 56% full, 88% of average will be the challenging one to fill being at the top of the watershed and with an inflow forecast of 85% of average. All rivers coming out of the west-central mountains are forecast at 85-100% of average for the May-July period and will help provide adequate irrigation supplies to the Treasure Valley.

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

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Weiser R nr Weiser (1)	MAY-JUL	100	165	200	85	240	335	235
	MAY-SEP	118	188	225	85	265	365	265
SF Payette R at Lowman	MAY-JUL	270	300	320	94	340	375	340
	MAY-SEP	315	350	375	95	400	440	395
Deadwood Resv Inflow (1,2)	MAY-JUL	74	91	98	94	105	122	104
	MAY-SEP	78	97	106	95	115	134	112
Lake Fork Payette R nr McCall	MAY-JUL	55	61	66	94	71	78	70
	MAY-SEP	56	63	68	93	73	81	73
NF Payette R at Cascade (1,2)	MAY-JUL	255	330	360	95	390	465	380
	MAY-SEP	260	340	375	95	410	490	395
NF Payette R nr Banks (2)	MAY-JUL	320	385	425	89	465	530	475
	MAY-SEP	325	395	440	89	485	555	495
Payette R nr Horseshoe Bend (1,2)	MAY-JUL	845	1010	1090	94	1170	1330	1160
	MAY-SEP	935	1120	1200	92	1280	1460	1310
Boise R nr Twin Springs (1)	MAY-JUL	330	415	455	99	495	580	460
	MAY-SEP	370	460	505	99	550	640	510
SF Boise R at Anderson Ranch Dam (1,2)	MAY-JUL	197	280	315	85	350	435	370
	MAY-SEP	215	300	340	84	380	465	405
Mores Ck nr Arrowrock Dam	MAY-JUL	39	53	64	94	76	95	68
	MAY-SEP	43	58	69	96	81	101	72
Boise R nr Boise (1,2)	MAY-JUL	695	835	900	95	965	1110	950
	MAY-SEP	775	925	995	95	1060	1210	1050

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

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

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Mann Creek	11.1	8.7	10.9	10.7	Mann Creek	1	183	82
Cascade	693.2	564.8	606.2	501.5	Weiser River	2	198	91
Deadwood	161.9	115.4	115.7	105.1	North Fork Payette	7	156	113
Anderson Ranch	450.2	251.4	305.0	284.9	South Fork Payette	3	140	119
Arrowrock	272.2	239.4	183.1	189.0	Payette Basin Total	12	165	114
Lucky Peak	293.2	239.9	218.0	219.8	Middle & North Fork Boi	4	165	115
Lake Lowell (deer Flat)	165.2	101.4	125.6	125.6	South Fork Boise River	3	135	115
					Mores Creek	3	411	115
					Boise Basin Total	7	181	114
					Canyon Creek	0		

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

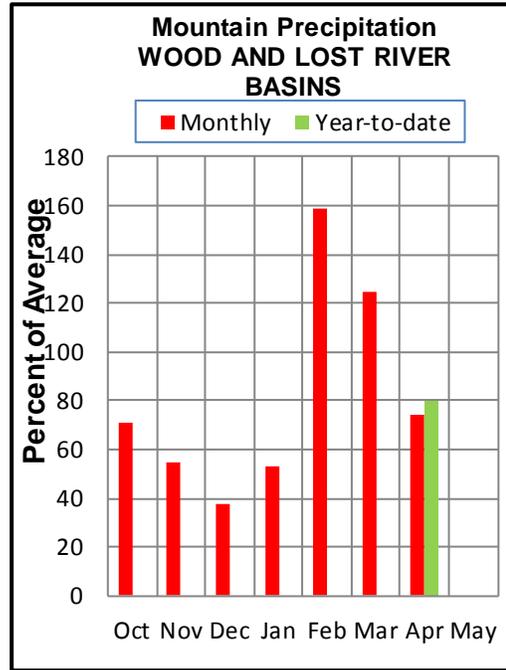
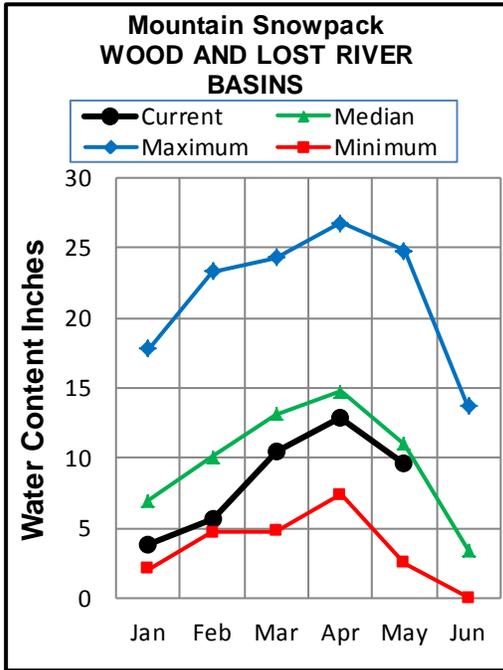
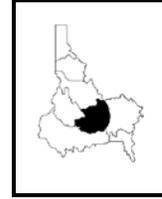
The average is computed for the 1981-2010 base period.

(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.

# WOOD and LOST RIVER BASINS

MAY 1, 2014



## WATER SUPPLY OUTLOOK

April precipitation across the Wood and Lost basins was 74% of the 1981 – 2010 average. Precipitation at individual sites varied widely in this part of the state. Dollarhide Summit, Galena, and Smiley Mountain SNOTEL sites all received less than 60% of the normal April precipitation amounts. This is not good news for these Big Wood, Little Wood and Big Lost basins which have been missing the better snowfall to the west in the west-central mountains and to the east in the Upper Snake. Hilts Creek SNOTEL in the Little Lost and Swede Peak in the Little Wood basin were the only sites to receive near normal precipitation amounts. Snowpack percentages vary widely throughout the Wood and Lost basins, with many lower sites melted out, while other sites with a deeper snowpack in the upper elevations are keeping the percentages higher. Because of this better snow in the higher elevations, snowpacks are 100% of normal in the Big Wood, and Little Lost but decrease to 70% in the Big Lost and only 39% in the Little Wood basin. Reservoir storage across the region increased since April 1st by 5-15% of their respective capacities. This change brought the total storage of the system up from 47% to 57% of capacity, with Magic approximately half full and Little Wood and Mackay Reservoirs approximately 80% full. Streamflow forecasts for the region are all well below average, with a few rivers being forecast to have half their seasonal average discharge. Camas Creek is the lowest and forecast at only 16% of average. The Big Wood River at Hailey and the Little Lost River are forecast at 61% and 71% of normal, respectively. As a result, irrigation shortages will occur, streamflow will remain below normal the rest of the summer which will result in minimal reservoir carryover for next year.

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

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Big Wood R at Haily (1)	MAY-JUL	63	106	125	61	144	187	205
	MAY-SEP	55	114	141	60	168	225	235
Big Wood R ab Magic Res	MAY-JUL	11.8	34	62	42	90	131	147
	MAY-SEP	14.3	41	66	42	91	129	159
Camas Ck nr Blaine	MAY-JUL	1.05	2.4	5.6	16	10.2	19.4	35
	MAY-SEP	0.72	2.6	6.0	17	10.8	20	36
Big Wood R bl Magic Dam (2)	MAY-JUL	3.8	47	77	44	107	150	176
	MAY-SEP	6.7	53	84	44	115	161	191
Little Wood R ab High Five Ck	MAY-JUL	11.1	17.7	23	44	29	39	52
	MAY-SEP	13.3	21	27	47	34	45	58
Little Wood R near Carey (2)	MAY-JUL	5.7	16.6	24	44	31	42	55
	MAY-SEP	8.4	20	28	46	36	48	61
Big Lost R at Howell Ranch	MAY-JUL	43	66	82	55	98	121	148
	MAY-SEP	49	76	94	56	112	139	169
Big Lost R Below Mackay Res	MAY-JUL	7.7	32	49	44	66	90	111
	MAY-SEP	18.8	49	69	50	89	119	138
Little Lost R nr Howe	MAY-JUL	11.5	14.6	17.0	71	19.5	24	24
	MAY-SEP	14.1	18.0	21	70	24	29	30
Camas Ck at Camas	MAY-JUL	2.8	5.4	10.9	44	16.4	25	25

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

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

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Magic	191.5	93.9	41.0	128.0	Big Wood ab Hailey	4	121	108
Little Wood	30.0	24.1	28.7	25.0	Camas Creek	0		
Mackay	44.4	34.7	38.4	32.8	Big Wood Basin Total	4	121	108
					Fish Creek	0		
					Little Wood River	1	39	15
					Big Lost River	3	103	64
					Little Lost River	2	107	103
					Birch-Medicine Lodge Cr	2	129	129
					Camas-Beaver Creeks	2	68	37

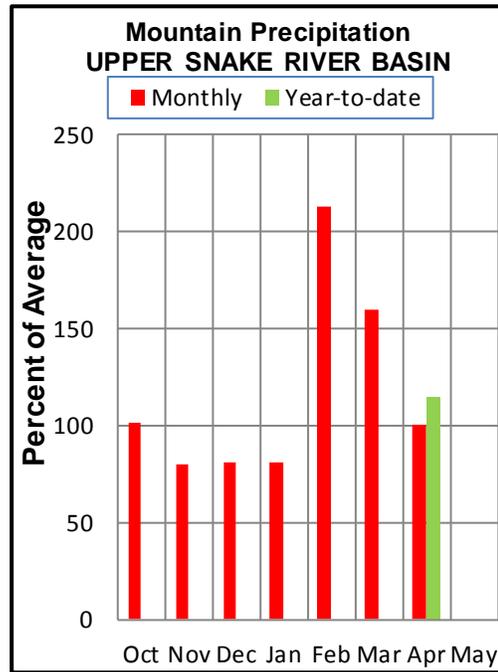
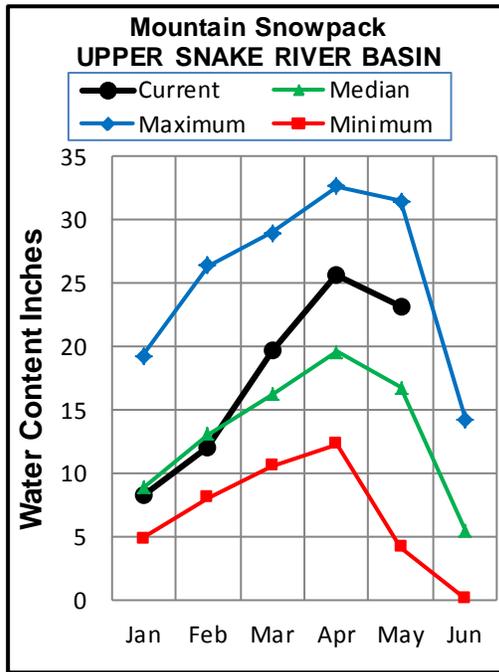
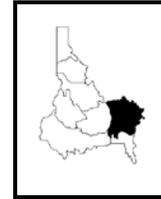
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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.

# UPPER SNAKE BASIN

MAY 1, 2014



## WATER SUPPLY OUTLOOK

After two months of extreme precipitation, April precipitation returned to average in the Upper Snake Basin. Water year precipitation, since October 1, is now 115% of average. Snowpack conditions continue to be well above normal with snow water content at 144% of the May 1 median for the basin as a whole. As a percent of median the highest snowpacks are in Hoback, Greys and Salt basins at 180%, 169% and 174% respectively. The lowest snowpacks are found in the Willow Creek and Blackfoot basins at 94% and 98% of median. For the Snake Basin above Heise the current snowpack is the fourth greatest amount going back to 1990 with only 1996, 1997 and 2011 recording more snow. Combined reservoir storage for the eight reservoirs in the Upper Snake above American Falls is 3,375,500 acre-feet, which is 85% of average and 63% of capacity. Most streamflow forecasts are well above average in the 110-160% of average range. The Portneuf and Blackfoot Rivers, at 84% and 90%, are the only rivers with forecasts below average for the May-July period. The Snake River near Heise is forecast at 3,880 KAF, 137% of average. Water supplies in the Upper Snake should be adequate based on the Snake River at Heise Surface Water Supply Index. A Water District #1 report from May 6, 2014 states that “long term projections indicate the American Falls storage right should fill to 100% towards the end of May. The remaining reservoir system will continue to fill through June. Weather and diversion demand in June will likely determine the level to which the system will fill and the amount of water spilled past Milner.” There is a lot of water stored in the mountains of the Upper Snake, future weather will determine how fast it comes off. High water is possible if hot days start stacking up against each other. After such a slow start to snow accumulation this winter, it’s good news for water users that there is excess water. Managers could be on their toes to protect downstream areas from flooding while also being sure to top off reservoirs after being assured the snowmelt peak flows have passed.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Henrys Fork nr Ashton (2)	MAY-JUL	325	380	420	101	460	525	415
	MAY-SEP	480	550	600	101	650	735	595
Henrys Fork nr Rexburg (2)	MAY-JUL	1210	1310	1380	118	1450	1550	1170
	MAY-SEP	1650	1770	1850	119	1930	2050	1560
Falls R nr Ashton (2)	MAY-JUL	290	325	355	113	385	430	315
	MAY-SEP	350	395	430	112	465	515	385
Teton R nr Driggs	MAY-JUL	174	195	210	157	225	250	134
	MAY-SEP	225	250	270	156	290	320	173
Teton R nr St. Anthony	MAY-JUL	395	440	475	148	510	560	320
	MAY-SEP	475	530	570	146	610	670	390
Snake R at Flagg Ranch	MAY-JUL	505	545	570	134	595	635	425
	MAY-SEP	555	600	630	134	660	705	470
Snake R nr Moran (1,2)	MAY-JUL	795	895	940	134	985	1080	700
	MAY-SEP	875	990	1040	134	1090	1200	775
Pacific Ck At Moran	MAY-JUL	172	198	215	141	230	260	152
	MAY-SEP	186	210	230	143	250	275	161
Buffalo Fork ab Lava nr Moran	MAY-JUL	310	335	355	134	375	400	265
	MAY-SEP	355	390	410	134	430	465	305
Snake R nr Alpine (1,2)	MAY-JUL	2270	2510	2620	134	2730	2970	1960
	MAY-SEP	2600	2900	3030	133	3160	3460	2280
Greys R nr Alpine	MAY-JUL	340	365	385	145	405	430	265
	MAY-SEP	400	435	455	144	475	510	315
Salt R nr Etna	MAY-JUL	285	335	365	149	395	445	245
	MAY-SEP	360	415	455	147	495	550	310
Snake R nr Irwin (1,2)	MAY-JUL	3250	3520	3650	137	3780	4050	2660
	MAY-SEP	3800	4120	4260	135	4400	4720	3150
Snake R nr Heise (2)	MAY-JUL	3540	3740	3880	137	4020	4220	2840
	MAY-SEP	4160	4390	4550	134	4710	4940	3390
Willow Ck nr Ririe	MAY-JUL	15.9	34	46	107	58	76	43
Blackfoot R ab Res nr Henry	MAY-JUN	17.2	29	38	90	49	67	42
Snake R nr Blackfoot (1,2)	MAY-JUL	505	1530	2000	120	2470	3490	1670
	MAY-SEP	0.000	0.000	1840	120	575	1840	1530
Portneuf R at Topaz	MAY-JUL	31	37	42	84	47	55	50
	MAY-SEP	42	50	56	84	62	72	67
Snake R at Neeley (1,2)	MAY-JUL	2400	3490	2430	116	4470	5560	2100
	MAY-SEP	1560	2270	2600	115	2930	3640	2260

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

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

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Henrys Lk Nr Lake	90.4	82.8	90.1	83.5	Henrys Fork-Falls River	7	146	130
Island Park	135.2	122.4	126.4	123.8	Teton River	4	187	153
Grassy Lake	15.2	14.3	13.3	12.8	Henrys Fork above Rexbu	11	158	137
Jackson Lake	847.0	297.6	649.4	445.7	Snake above Jackson Lak	5	150	145
Palisades Res Nr Irwin	1400.	509.6	756.7	911.7	Pacific Creek	2	137	148
Ririe Lake Nr Ririe	80.5	66.6	62.0	58.7	Gros Ventre River	3	153	144
Blackfoot Res Nr Henry	348.7	202.9	247.9	211.3	Hoback River	5	202	171
American Falls	1672.	1577.	1574.	1528.	Greys River	4	163	169
					Salt River	3	167	178
					Snake above Palisades	18	164	158
					Willow Creek	2	124	111
					Blackfoot River	1	268	207
					Portneuf River	4	135	101
					Snake abv American Fall	27	157	147

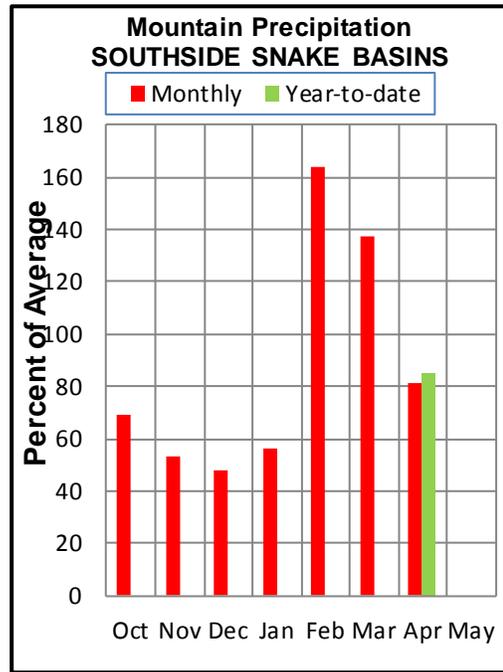
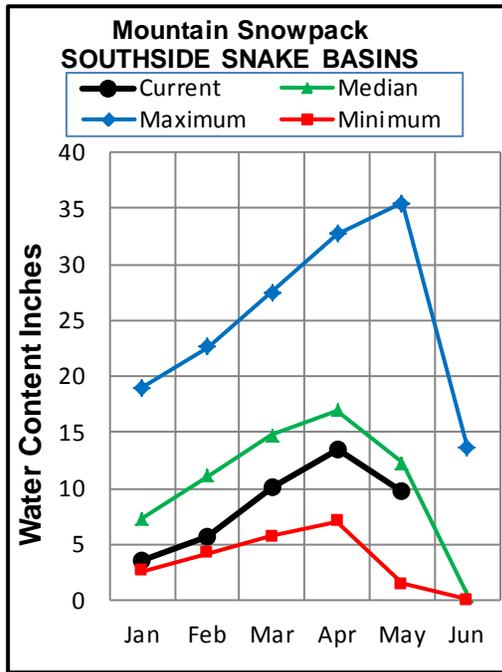
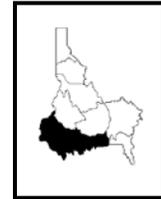
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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.

# SOUTHSIDE SNAKE RIVER BASINS

MAY 1, 2014



## WATER SUPPLY OUTLOOK

April precipitation was 80% of average across the Southside Snake basins. Localized precipitation was slightly better in the Goose Creek basin (near Oakley Reservoir) where amounts were average or better. Water year precipitation for the Southside Region, since October 1, is 85% of average. Snowpack conditions continue to be below normal. May 1 snow water contents are 47% of median in the Owyhee basin, 52% in the Bruneau basin, 62% in Salmon Falls basin and 83% in the Goose-Trapper basins. May-July streamflow is expected to be well below average. From west to east, streamflow forecasts are 39% of average for the Owyhee River near Rome, 51% for the Bruneau River near Hot Spring, 37% for Salmon Falls Creek, and 69% for Oakley Reservoir inflow. Reservoir storage is also below normal with the exception of Brownlee Reservoir which has an average amount. Owyhee and Wildhorse reservoirs are storing about 35% of average. Elsewhere, Salmon Falls Reservoir contains 50% and Oakley Reservoir 72% of their normal May 1 amounts. The Surface Water Supply Index (SWSI) ranks the current water supply in the bottom third of all years since 1981. Conditions are most dire in the Salmon Falls basin where this year may turn out to be the fourth or fifth driest year since 1981. Compared to last year's low water supply, this year's supply (calculated by combining reservoir storage and the 50% chance of exceedance streamflow forecast) which is the second consecutive drought year, will likely be about the same as 2013 in the Bruneau and Oakley basins, but significantly less than 2013 in the Owyhee and Salmon Falls basins. Across the board, and as mentioned earlier this winter, irrigation shortages will occur in the Owyhee, Oakley and Salmon Falls basins. Not only do the 50% chance of exceedance volumes fall short, but even the 10% chance of exceedance forecast volume would also be short when combined with the below normal reservoir amounts. Mitigation of low water supply impacts and wise planning and planting are the keys to limit impacts. Let's hope the brewing El Nino conditions bring more moisture across these southern Idaho basins in 2015.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)			Chance Of Exceeding * 50% (1000AF) (% AVG.)		30% (1000AF) 10% (1000AF)	
Goose Ck ab Trapper Ck nr Oakley	MAY-JUL	1.25	5.7	8.7	66	11.7	16.2	13.2		
	MAY-SEP	1.52	6.3	9.6	66	12.9	17.7	14.5		
Trapper Ck nr Oakley	MAY-JUL	1.81	2.5	2.9	78	3.3	4.0	3.7		
	MAY-SEP	2.7	3.5	4.0	82	4.5	5.3	4.9		
Oakley Reservoir Inflow	MAY-JUL	3.1	8.2	11.6	69	15.0	20	16.9		
	MAY-SEP	4.4	9.9	13.6	70	17.3	23	19.4		
Salmon Falls Ck nr San Jacinto	MAY-JUL	6.8	12.8	18.0	37	24	35	49		
	MAY-SEP	7.9	14.2	19.6	37	26	36	53		
Bruneau R nr Hot Springs	MAY-JUL	33	54	72	51	92	126	140		
	MAY-SEP	37	60	78	53	99	134	148		
Reynolds Ck at Tollgate	MAY-JUL	0.25	1.35	2.1	41	2.8	4.0	5.1		
Owyhee R nr Gold Ck (2)	MAY-JUL	0.000	0.000	0.31	3	2.0	9.7	9.6		
	MAY-SEP	0.000	0.000	0.040	0	0.98	7.4	8.3		
Owyhee R Nr Rome	MAY-JUL	27	52	73	39	98	141	188		
	MAY-SEP	36	63	86	42	112	157	205		
Owyhee R bl Owyhee Dam (2)	MAY-JUL	47	76	100	48	127	173	210		
	MAY-SEP	57	89	115	48	144	193	240		

SOUTHSIDE SNAKE RIVER BASINS Reservoir Storage (1000 AF) - End of April					SOUTHSIDE SNAKE RIVER BASINS Watershed Snowpack Analysis - May 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Oakley Reservoir Near Oakley	75.6	24.6	30.5	34.3	Raft River	1	130	132
Salmon Falls Reservoir	182.6	35.9	49.5	71.6	Goose-Trapper Creeks	3	108	83
Wild Horse Re Nr Gold Creek	71.5	16.9	32.2	49.4	Salmon Falls Creek	4	74	70
Lake Owyhee Near Nyssa	715.0	184.1	352.9	533.1	Bruneau River	2	62	62
Brownlee	1420.	1147.	1123.	1161.	Reynolds Creek	3	202	68
					Owyhee Basin Total	1	180	61
					Owyhee Basin SNOTEL	1	180	61

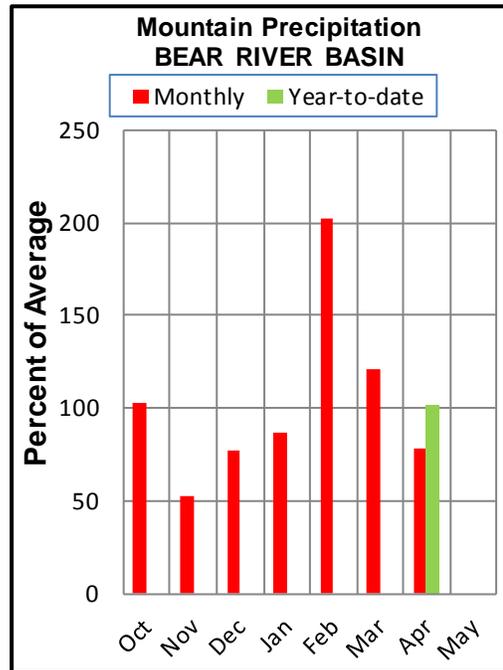
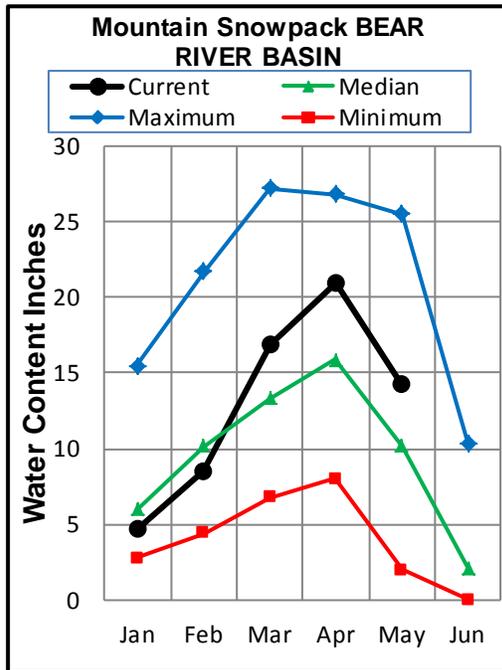
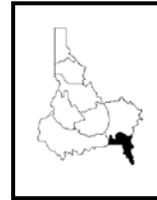
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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

MAY 1, 2014



## WATER SUPPLY OUTLOOK

April precipitation was 78% of average in the Bear River Basin. Water year precipitation, since October 1, is 102% of average. Snowpack conditions continue to be well above normal with snow water content at 120% of the May 1 median. Bear Lake storage on the last day of April was 732,700 acre-feet, 95% average. Montpelier Creek Reservoir is storing 2,800 acre-feet, 104% of average. Streamflow is expected to be near or above average for most tributaries in the basin, the largest exception is the Bear River below Stewart Dam which is forecast at 68% of average. The highest forecast is for the Smiths Fork at 124% of average for the May-July period. The Surface Water Supply Index (SWSI) indicates an adequate water supply for Bear Lake water users with supplies similar to 2013. Natural flow water users will be happy to see and plan for much greater volumes in the rivers than the past two seasons.

BEAR RIVER BASIN  
Streamflow Forecasts - May 1, 2014

Forecast Point	Forecast Period	<<<<<< Drier ===== Future Conditions ===== Wetter =====>>>>>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
		Chance Of Exceeding *										
Bear R nr UT-WY State Line	APR-JUL	85	98	108	96	117	131	112				
	APR-SEP	95	110	120	98	130	145	123				
	MAY-JUL	81	93	102	98	110	122	104				
	MAY-SEP	89	103	113	97	122	136	116				
Bear R ab Res nr Woodruff	APR-JUL	88	107	120	99	132	151	121				
	APR-SEP	94	112	125	98	138	156	128				
	MAY-JUL	74	91	103	98	114	132	105				
	MAY-SEP	79	97	108	97	120	137	111				
Big Ck nr Randolph	APR-JUL	1.68	2.6	3.1	81	3.7	4.6	3.8				
	MAY-JUL	1.22	2.1	2.6	84	3.2	4.1	3.1				
Smiths Fk nr Border	APR-JUL	94	102	108	121	113	121	89				
	APR-SEP	106	115	122	117	128	138	104				
	MAY-JUL	85	93	99	124	104	112	80				
	MAY-SEP	97	106	113	119	119	129	95				
Bear R bl Stewart Dam	APR-JUL	37	89	124	68	159	211	183				
	APR-SEP	49	104	141	69	178	233	205				
	MAY-JUL	30	71	99	68	127	168	146				
	MAY-SEP	33	82	115	68	148	197	169				
Little Bear R at Paradise	APR-JUL	14.9	24	30	73	37	46	41				
	MAY-JUL	3.4	12.1	18.0	64	24	33	28				
Logan R nr Logan	APR-JUL	91	105	112	101	123	136	111				
	MAY-JUL	75	88	98	102	107	120	96				
Blacksmith Fork nr Hyrum	APR-JUL	28	41	44	102	58	71	43				
	MAY-JUL	13.4	25	33	106	41	53	31				

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of April					BEAR RIVER BASIN Watershed Snowpack Analysis - May 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Bear Lake	1421.	732.7	841.1	770.7	Smiths & Thomas Forks	3	156	156
Montpelier Ck Res	4.0	2.8	2.8	2.7	Bear River ab WY-ID lin	3	156	156
					Montpelier Creek	1	124	126
					Mink Creek	1	156	102
					Cub River	1	135	91
					Bear River ab ID-UT lin	8	146	126
					Malad River	0		

\* 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

- Henry 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)**

<u>Basin/ Reservoir</u>	<u>Dead Storage</u>	<u>Inactive Storage</u>	<u>Active Storage</u>	<u>Surcharge Storage</u>	<u>NRCS Capacity</u>	<u>NRCS Capacity Includes</u>
<b><u>Panhandle Region</u></b>						
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
<b><u>Clearwater Basin</u></b>						
Dworshak	Unknown	1452.00	2016.00	---	3468.0	Inactive + Active
<b><u>Weiser/Boise/Payette Basins</u></b>						
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
<b><u>Wood/Lost Basins</u></b>						
Magic	Unknown	---	191.50	---	191.5	Active
Little Wood	Unknown	---	30.00	---	30.0	Active
Mackay	0.13	---	44.37	---	44.4	Active
<b><u>Upper Snake Basin</u></b>						
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
<b><u>Southside Snake Basins</u></b>						
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
<b><u>Bear River Basin</u></b>						
Bear Lake	5000.00	119.00	1302.00	---	1421.0	Active + Inactive: includes 119 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 *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (1000 AF)	(% AVG.)	30% (1000AF)	10% (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

---

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 Morrissey, 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

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

