

# Idaho Water Supply Outlook Report February 1, 2003



**Magic Reservoir in the Big Wood basin, January 2003  
10% of capacity, 22% of average**

# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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**<http://www.id.nrcs.usda.gov/snow>**

**Water supply forecasts are produced in cooperation and coordination  
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## *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 it 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 prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. 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 uncertain 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.

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# IDAHO WATER SUPPLY OUTLOOK REPORT

February 1, 2003

## SUMMARY

Warm January temperatures resulted in rain falling at elevations over 7,000 feet and getting much needed moisture back into the hydrologic cycle. But much more is needed. The lowest snowpacks are half of normal in the Spokane and Oakley basins. The lowest streamflow forecasts are in the high desert streams south of the Snake River and the Bear River at 30-50% of average. The highest snowpacks are near normal with projected near normal streamflows in the Big Lost River basin. With less than half the winter still to come, water users who rely on Idaho's snowfall remain optimistic still hoping for the possibility of more winter storms. But the odds of recovering to near normal or better levels by April 1 are slim based on historic data. Snow indices for several basins across the state illustrate that when February 1 snowpack was below average, the snow returned to near normal or better by April 1 only about 4 out of 25 years. Only 1 of these 4 years, 1983, was an El Nino year like this year. Irrigation water shortages are expected across most of southern and central Idaho especially with below normal future precipitation.

## SNOWPACK

Rain above 7,000 feet melted some of the lower elevation snowpacks. Higher snow measuring stations retained some of the rainfall in the snow, and some drained out of the snowpack. The rainfall was a mixed blessing -- it provided much needed moisture to Idaho, but would have helped the summer's water supply picture more if it had all fell as snow. Currently, the lowest snowpacks in the state are about half of normal in the Coeur d'Alene, St. Joe, and Oakley basins. Next lowest are 55-65% of average in the Bear River, Raft, Portneuf, Salmon Falls, Bruneau, Owyhee and North Fork Clearwater basins. Snowpacks in the 70-95% of average include Pend Oreille, Clearwater, Salmon, Payette, Boise, Big Wood and upper Snake. The highest snowpacks remain in the Little Wood and Big Lost basins at 105% of average. Snowpacks range from 40-65% of their April 1 seasonal snow water content peaks with only 40% of the winter still to come.

Warm January temperatures were the hot talk last month. Many NWS valley and SNOTEL mountainous weather stations recorded near or record high average monthly temperatures. New records set depends on length of data collected at each station.

Station	Basin	Avg. Jan. Temp.	Jan. 2003 Avg. Temp.	Rank
-----	-----	-----	-----	-----
Lost Lake	Clearwater	23 F	30 F	1 <sup>st</sup> warmest of 13 years
Vienna Mine	Salmon	17	25	1 <sup>st</sup> warmest of 14 years
Deadwood Summit	Salmon	17	27	1 <sup>st</sup> warmest of 14 years
Mores Creek Sum	Boise	32	23	1 <sup>st</sup> warmest of 19 years
Boise NWS	Boise	30.2	38.7	5 <sup>th</sup> warmest of 139 years
Pocatello NWS	Snake	24.4	34.2	2 <sup>nd</sup> warmest of 104 years

Lewis Lake Div	Yellowstone NP	17	25	1 <sup>st</sup> warmest of 19 years
Magic Mountain	Salmon Falls	23	30	1 <sup>st</sup> warmest of 13 years
Emigrant Summit	Bear	19	30	1 <sup>st</sup> warmest of 13 years

As a result of the rain and warm temperatures, some low elevation snow measuring sites are at or near record low values. From north to south:

- Lookout SNOTEL site, located at 5,140 feet near the ski area, is the 3<sup>rd</sup> lowest since 1945. Only 1977 and 1981 had less.
- Sherwin SNOTEL site, 3,200 feet, in the headwaters of the St. Maries/Potlatch rivers is 21% of average with 1.8 inches of snow water; 2<sup>nd</sup> lowest since records started in 1960.
- Pierce Ranger Station snow course in the Clearwater basin has 1.8 inches of snow water, average is 7.8 inches; 2<sup>nd</sup> lowest since 1951.
- Bad Bear, 4,940 feet, just above Idaho City, and Bogus Basin Road, 5,540 feet, both in the Boise basin are the 4<sup>th</sup> and 5<sup>th</sup> lowest since records started in early 1960s.

## PRECIPITATION

January precipitation was the greatest in the Clearwater basin at 135% of average, normal in the west central mountains, and 70-90% across central and eastern Idaho. Southern Idaho missed out on the storms that tracked across central and northern Idaho. January precipitation was about 45% of average in the basins stretching from the Owyhee basin to the Bear River. The lowest amounts were about 20% of average in southern Idaho and headwaters of the Bear River in Utah. These southern Idaho basins also host the lowest water year to date precipitation in the state at 67% of average. The highest water year to date precipitation is in the Salmon and west central mountains at 90% of average.

## RESERVOIRS

Reservoir storage got a little boost in January from the rain falling above 7,000 feet in elevation. Warm temperatures and rain melted some of the low and mid-elevation snowpacks and brought streams up across the western edge and parts of central Idaho. Coeur d'Alene Lake increased from 33% to 60% of its summer capacity during January. Dworshak Reservoir increased from 63% to 68% of capacity and is now 109% of average. The Payette reservoir system storage increased from 56% to 59% of capacity. All reservoirs and lakes from Cascade Reservoir north are now storing average or above storage levels. The Boise reservoir system increased from 33% to 38% of capacity and is now the same as a year ago. The Owyhee Reservoir came up from 16% to 20% of capacity. Elsewhere reservoirs in the state are 25-65% of average.

The increase in January streamflow from rain and some snow melting helped the water supply picture by getting much needed moisture back into the hydrologic picture -- soil moisture, streamflow and reservoir storage. In a dry year like this, we'll take what ever we can get. Ideally, it would be better if all the precipitation fell as snow and remained in the mountains to melt in the spring and summer, keeping the streams higher in the summer when the consumptive use of water and demand is greatest. Consumptive use of water is least in winter when the majority of Idaho's annual precipitation falls, and the highest in summer when monthly precipitation amounts are the least. In addition, having that January precipitation fall as snow would have provided much needed economic help for Idaho's winter recreation.

Note: NRCS reports reservoir information in terms of usable volumes, which includes both active, inactive and in some cases dead storage. Other operators may report reservoir contents in different terms. For additional information, see the reservoir definitions in this report.

## **STREAMFLOW**

Most streamflow forecasts decreased from a month ago. The highest forecasts call for near normal runoff in the Big Lost River basin. The lowest forecasts are in the Bear River basin at 32% of average. Elsewhere across southern Idaho, streams are forecast for 40-50% of average for Oakley Reservoir, Salmon Falls and Owyhee. The Bruneau River fairs slightly better at 57%. Upper Snake streams are forecast at 60-80% of average. Big Wood, Boise and Payette basins are forecast at 80-90% of average. The Salmon is forecast at 86% of average. Dworshak Reservoir inflow and the St. Joe are forecast at 55-65% of average. Pend Orielle Lake inflow is forecast at 65% of average, while the northern Panhandle tributaries are forecast are 85% of average.

To reduce the risk of not having enough water, managers should consider using the 90% or 70% Chance Exceedance Probability Forecasts because of the dry soils, inefficiency of the snowpack to produce streamflow following dry years, below normal snow levels and assumption of normal future precipitation in the forecast equations. Based on the Surface Water Supply Index (SWSI), irrigation water supplies will be adequate in the Boise basin if the 50% Exceedance Forecast occurs. Shortages are likely across the rest of central, southern and eastern Idaho especially if future precipitation is below normal. Magnitude of shortages depends on your water right and water source or sources. Water users should stay in contact with their irrigation district for more specific information.

## **RECREATION**

Warm temperatures and winter precipitation falling as rain in the mountain is not helping the winter recreation, but below freezing temperatures in Idaho's central mountains has kept most of the precipitation falling as snow. The Big Wood, Little Wood and Big Lost basins host some of the best snow in the West. Summer whitewater activities in Idaho remains promising as below normal snow levels often result in a shorter high water season and can extend the floating season on the lower rivers. Headwater streams may run low again as a result of the low snow. More snow and spring rains are needed in the Owyhee and Bruneau high desert streams.

**IDAHO SURFACE WATER SUPPLY INDEX (SWSI) As of February 1, 2003**

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 +4.1 (abundant supply) to -4.1 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences.

SWSI values are published January through May and provide a more comprehensive outlook of water availability than either streamflow forecasts or reservoir storage figures alone. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been established for most basins to indicate the potential for agricultural water shortages.

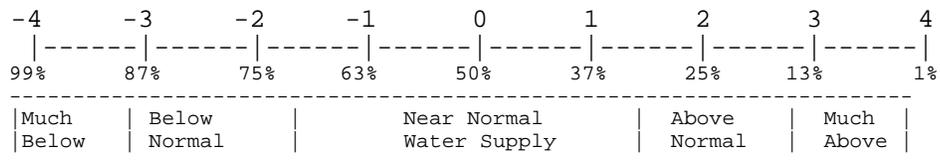
The following agencies and cooperators provide assistance in the preparation of the Surface Water Supply Index for Idaho:

US National Weather Service  
 US Bureau of Reclamation  
 Idaho Water Users Association

US Army Corps of Engineers  
 Idaho Dept. of Water Resources  
 PacifiCorp

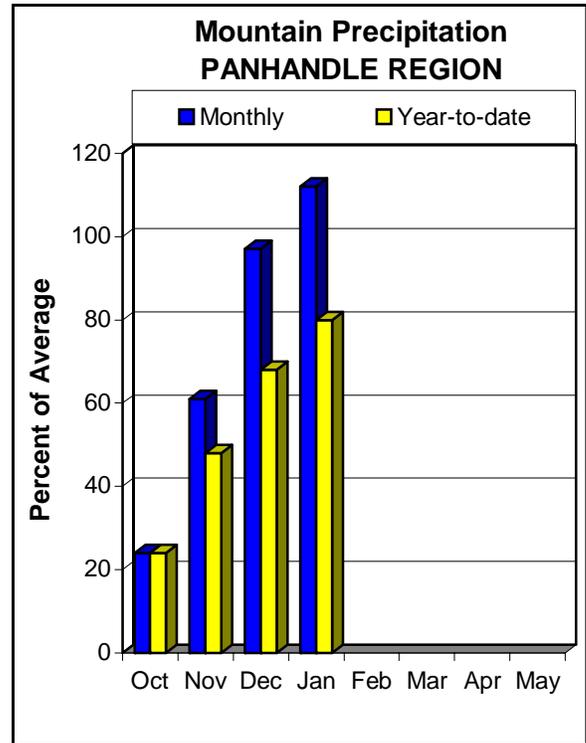
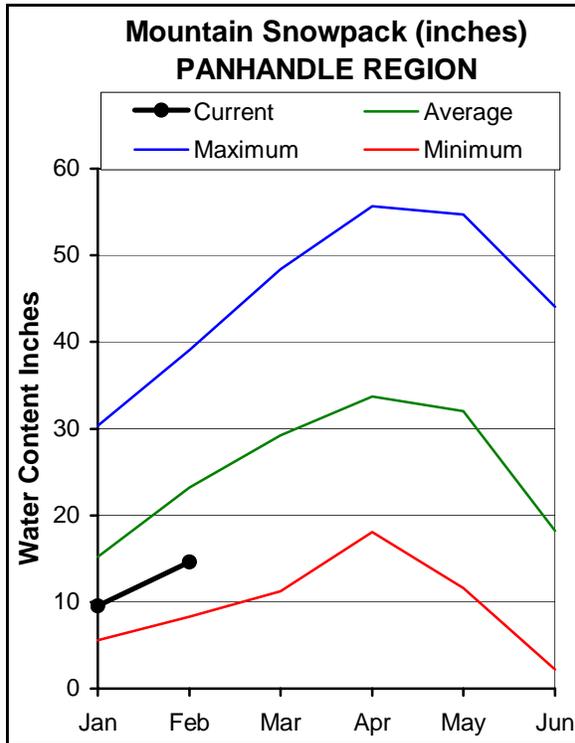
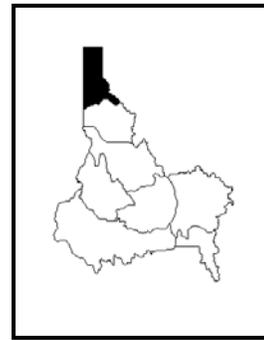
<i>BASIN or REGION</i>	<i>SWSI Value</i>	<i>Most Recent Year With Similar SWSI Value</i>	<i>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</i>
PANHANDLE	-3.3	1987/94	NA
CLEARWATER	-2.2	1988	NA
SALMON	-0.8	1995	NA
WEISER	-1.4	2000	NA
PAYETTE	-1.0	2000	NA
BOISE	-2.0	1989	-2.6
BIG WOOD	-1.2	2000	-1.4
LITTLE WOOD	-0.5	1985	-2.6
BIG LOST	-0.7	1985	-0.8
LITTLE LOST	-2.5	2000	0.0
HENRYS FORK	-2.0	1990/91	-3.3
SNAKE (HEISE)	-2.9	1988	-2.3
OAKLEY	-2.2	1988	0.0
SALMON FALLS	-2.6	1990/91	0.0
BRUNEAU	-1.9	1991	NA
BEAR RIVER	-3.9	2002	-3.8

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



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 FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

January precipitation was 112% of average. As a result, water year to date precipitation rose to 80%. The lowest snowpacks are only half of average in the Coeur d'Alene, St. Joe and Spokane river basins. The Moyie and Priest basins fair better at 75% and 91% of average, respectively. The lowest snowpack percentages are in the lower elevations south of Coeur d'Alene Lake with some site near record low levels. Sherwin SNOTEL site, 3,200 feet, in the headwaters of the St. Maries/Potlatch rivers is 21% of average with 1.8 inches of snow water; 2<sup>nd</sup> lowest since records start in 1960; only 1981 had less snow. Lookout SNOTEL site, located at 5,140 feet near the ski area, is the 3<sup>rd</sup> lowest since 1945. Only 1977 and 1981 had less. Overall, the Panhandle Region snowpack is 63% of average, just over half of last year's. The Pend Oreille river basin snowpack is 70% of average, based on 70 snow measuring sites. Storage in the reservoirs and lakes got a boost last month with the winter rains in January. Current storage is above average for water storage facilities in Idaho and Montana. Lost Lake SNOTEL site at 6,110 feet along the St. Joe and North Fork Clearwater river basin divide, recorded its warmest average monthly January temperature for its 14 year data record. Streamflow forecasts decreased from last month and now range from 55-85% of average. Water users should plan for and expect below normal runoff volumes this summer.

PANHANDLE REGION  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		=====		Chance Of Exceeding *			=====	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
KOOTENAI at Leonia (1,2)	APR-JUL	4030	4880	5270	75	5660	6510	7035
	APR-SEP	5880	6020	6080	75	6140	6280	8125
MOYIE RIVER at Eastport	APR-JUL	291	323	345	86	367	399	403
	APR-SEP	304	337	360	86	383	416	418
SMITH CREEK	APR-JUL	76	91	102	83	113	128	123
	APR-SEP	77	94	106	82	118	135	129
BOUNDARY CREEK	APR-JUL	82	97	107	87	117	132	123
	APR-SEP	87	102	112	87	122	137	129
CLARK FK at Whitehorse Rpds (1,2)	APR-JUL	3850	6220	7290	65	8360	10730	11280
	APR-SEP	4230	6830	8010	64	9190	11790	12460
PEND OREILLE Lake Inflow (2)	APR-JUL	5350	7110	8300	65	9490	11250	12700
	APR-SEP	5830	7750	9060	65	10370	12290	13900
PRIEST near Priest River (1,2)	APR-JUL	500	610	660	81	710	820	814
	APR-SEP	415	615	705	81	795	1000	868
COEUR D'ALENE at Enaville	APR-JUL	240	355	430	58	505	620	739
	APR-SEP	260	375	455	59	535	650	778
ST. JOE at Calder	APR-JUL	430	565	655	58	745	880	1136
	APR-SEP	460	595	690	57	785	920	1205
SPOKANE near Post Falls (2)	APR-JUL	790	1130	1370	54	1610	1950	2552
	APR-SEP	825	1180	1420	54	1660	2020	2650
SPOKANE at Long Lake (2)	APR-JUL	950	1350	1620	57	1890	2290	2851
	APR-SEP	1080	1500	1780	58	2060	2480	3072

PANHANDLE REGION Reservoir Storage (1000 AF) - End of January					PANHANDLE REGION Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNGRY HORSE	3451.0	2427.0	2503.0	2214.7	Kootenai ab Bonners Ferry	18	66	69
FLATHEAD LAKE	1791.0	1218.0	1181.0	971.2	Moyie River	7	78	75
NOXON RAPIDS	335.0	329.5	320.3	310.9	Priest River	4	77	91
PEND OREILLE	1561.3	943.5	577.0	749.3	Pend Oreille River	70	73	70
COEUR D'ALENE	238.5	142.5	115.0	115.6	Rathdrum Creek	4	36	59
PRIEST LAKE	119.3	64.0	63.7	55.5	Hayden Lake	0	0	0
					Coeur d'Alene River	6	42	48
					St. Joe River	3	46	54
					Spokane River	12	39	50
					Palouse River	1	15	21

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

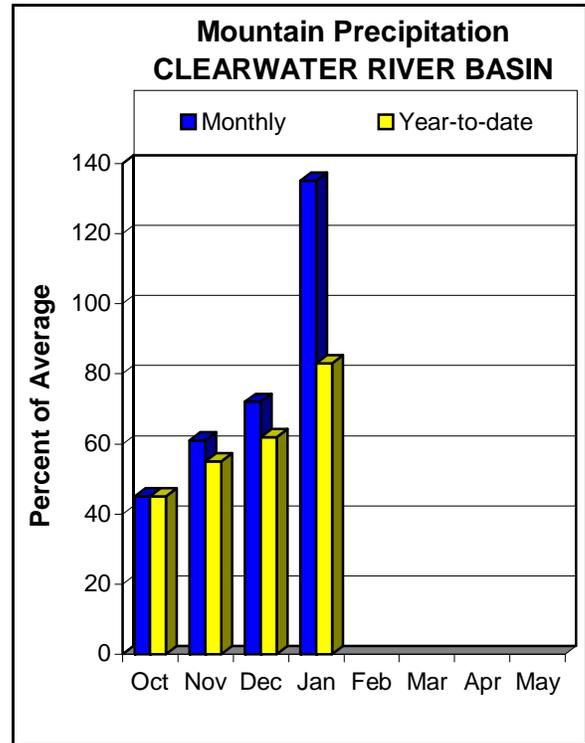
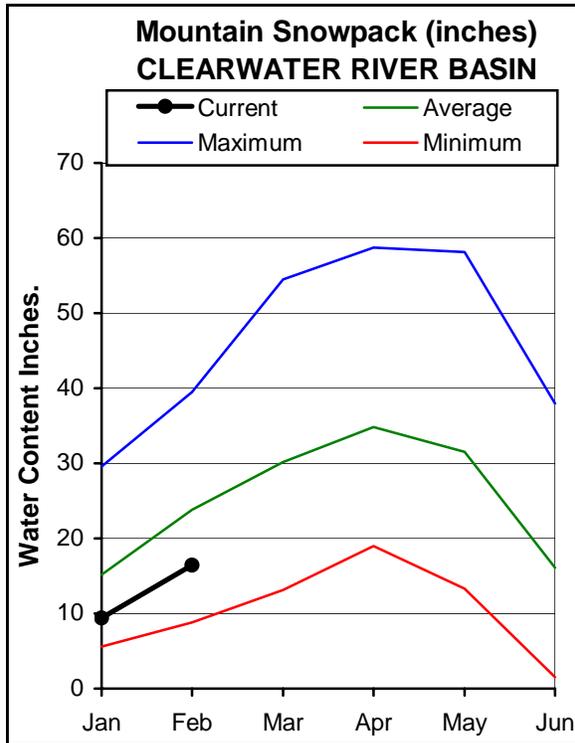
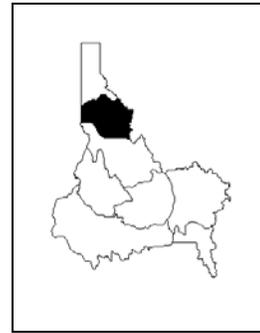
The average is computed for the 1971-2000 base period.

(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

## FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

January precipitation was 135% of average, highest in the state. Precipitation for the water year that started October 1 is 83% of average. However, with warm temperatures and rain falling across most of the basin in January, some of the rain was retained in the snowpack and some ran off, increasing streamflow levels. Snowpack percentages are 86% of average in the Lochsa and 83% in the Selway. The North Fork Clearwater River basin snowpack is 66% of average, 6<sup>th</sup> lowest since 1961. Pierce Ranger Station snow course has 1.8 inches of snow water, average is 7.8 inches. This is the 2<sup>nd</sup> lowest since 1951. Only 1981 had less snow water on February 1! Lost Lake SNOTEL site, located at 6,110 feet along North Fork Clearwater and St. Joe mountainous divide, recorded its warmest average daily temperatures in January for its 14-year data record. Warm temperatures and rain increased streams to record high levels for those days in January only because the streams are usually fairly low at this time of year. The Clearwater River at Orofino peaked at over 30,000 cfs. Dworshak Reservoir increased from 63% of capacity to 68% of capacity during January and is now 109% of average. Spring and summer streamflow forecasts decreased from last month and call for 77% of average for the Selway River, 77% for the Lochsa River, and 66% for Dworshak Reservoir inflow. The Clearwater River at Spalding is forecast at 66% of average.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)			Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF) 10% (1000AF)	
SELWAY near Lowell	APR-JUL	1270	1460	1580	77	1700	1890	2062		
	APR-SEP	1330	1530	1660	77	1790	1990	2170		
LOCHSA near Lowell	APR-JUL	950	1080	1170	77	1260	1390	1530		
	APR-SEP	1000	1140	1230	76	1320	1460	1609		
DWORSHAK RESV INFLOW (1,2)	APR-JUL	915	1370	1730	66	2090	2550	2635		
	APR-SEP	980	1490	1850	66	2210	2720	2799		
CLEARWATER at Orofino (1)	APR-JUL	1550	2760	3310	71	3860	5070	4645		
	APR-SEP	1730	2940	3490	71	4040	5250	4900		
CLEARWATER at Spalding (1,2)	APR-JUL	1820	3870	4800	65	5730	7780	7435		
	APR-SEP	2100	4150	5080	65	6010	8060	7850		

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of January					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DWORSHAK	3468.0	2366.2	2405.2	2170.7	North Fork Clearwater	9	59	66
					Lochsa River	4	89	86
					Selway River	5	84	83
					Clearwater Basin Total	17	65	70

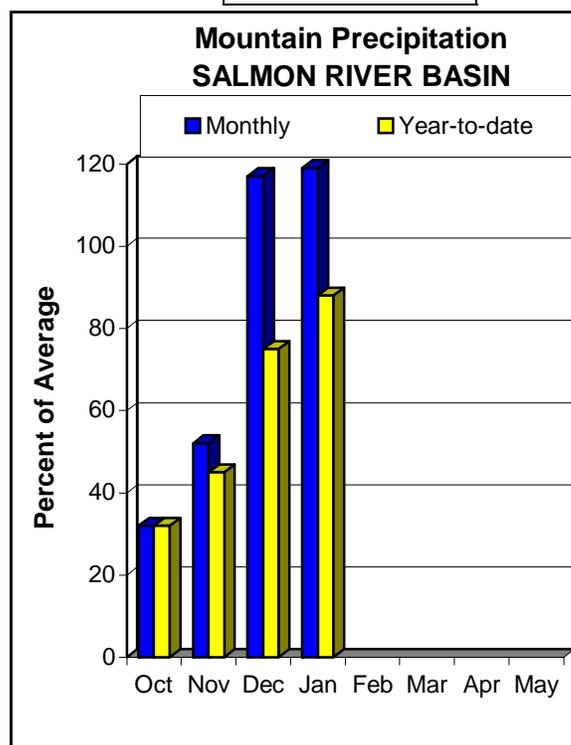
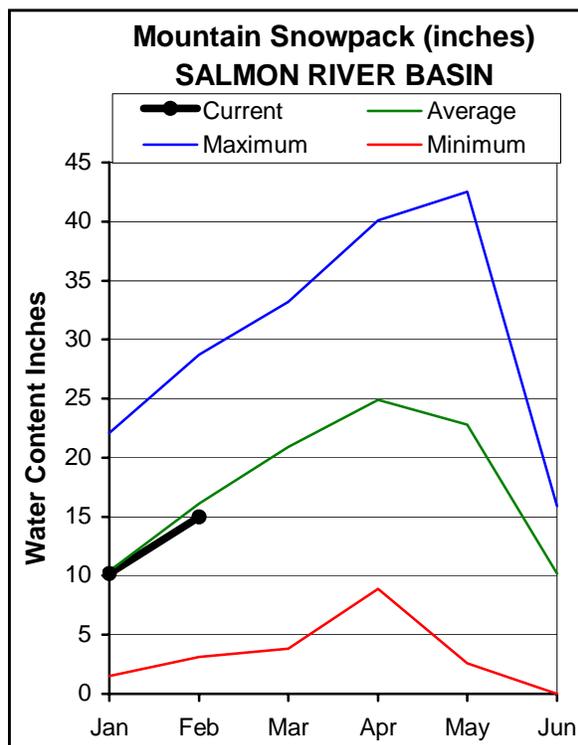
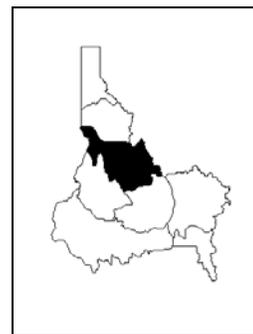
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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

## FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

January precipitation was 119% of average in the Salmon basin. Water year to date precipitation is 88% of average, about 12% less than last year at this time. Snowpack percentages in the Salmon from high to low are: 101% of average for the South Fork Salmon, 97% for the Little Salmon, 89% for the Middle Fork Salmon, 87% for the Salmon River above Salmon, and 82% for the Lemhi. The lowest snow levels are in the middle of the Salmon basin at Morgan Creek SNOTEL, located at 7,600 feet between Challis and Salmon. This area missed the storms that tracked across the central mountains to the south and those that tracked across the Clearwater basin at the end of January. Morgan Creek SNOTEL site has 4.5 inches of snow water; average is 8.4 inches. This is the 3<sup>rd</sup> lowest since the data starts in 1963. Even more important in terms of accumulative drought effects, this area has missed the storm track the past three years: last year's February 1 snow was 8<sup>th</sup> lowest, and the 2001 February 1 snow was 6<sup>th</sup> lowest since 1963! Average January daily temperatures were the warmest recorded at Deadwood Summit and Vienna Mine SNOTEL sites; about 8 degrees Fahrenheit above their 14-year short-term average. A snow index for the Middle Fork Salmon based on Banner Summit, Deadwood Summit and Morgan Creek SNOTEL sites illustrates that when the February 1 snowpack is below average, only 4 of 21 years has the snow returned to near normal or better by April 1. Unfortunately, these four years were not classified as El Nino years. Streamflow forecast are for 85% of average for the Salmon River above Salmon and 86% for the Salmon River at White Bird. Keep your fingers and skis crossed for more snow, but if the future remains dry, be ready for an early float season in the heart of Idaho.

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SALMON RIVER BASIN  
Streamflow Forecasts - February 1, 2003

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		50% (Most Probable) (1000AF) (% AVG.)			30% (1000AF)		10% (1000AF)	
		Chance Of Exceeding *										
SALMON at Salmon (1)	APR-JUL	355	615	730	85	845	1105	857				
	APR-SEP	475	735	850	85	965	1225	1000				
SALMON at White Bird (1)	APR-JUL	2970	4390	5030	86	5670	7090	5851				
	APR-SEP	3520	4940	5580	86	6220	7640	6482				

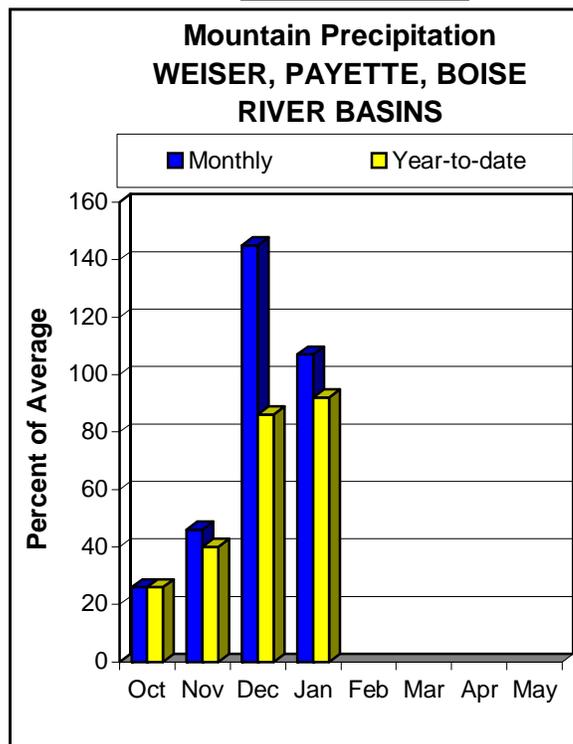
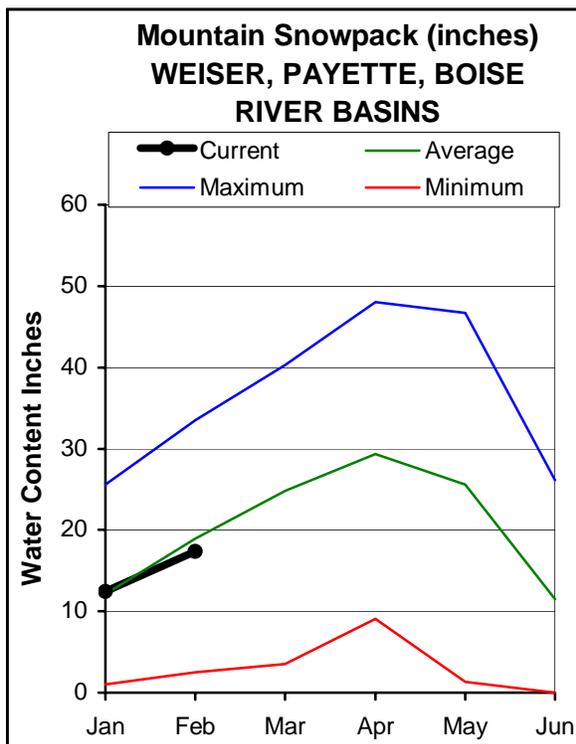
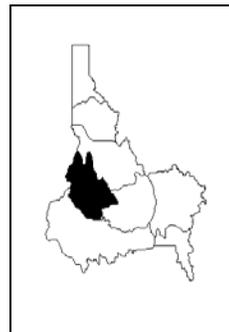
SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of January					SALMON RIVER BASIN Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					Salmon River ab Salmon	9	98	87
					Lemhi River	6	102	82
					Middle Fork Salmon River	4	96	89
					South Fork Salmon River	3	103	101
					Little Salmon River	4	92	97
					Salmon Basin Total	24	97	90

\* 90%, 70%, 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 1971-2000 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 FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

Rain above 7,000 feet melted some of the lower elevation snowpacks. Higher snow measuring stations retained some of the rainfall in the snow and some drained out of the snowpack. January precipitation was above average in the Payette basin and decreases to below average in the Boise ranging from 150% of average at Brundage Reservoir SNOTEL to 63% along the South Fork Boise and Camas/Big Wood basin divide. Rain and warm temperatures melted some of the low elevation snow. Bad Bear, 4,940 feet above Idaho City, and Bogus Basin Road, 5,540 feet, snow measuring sites are the 4<sup>th</sup> and 5<sup>th</sup> lowest since records start. Snowpack percentages are 86% of average in the Weiser, 92% in the Payette and 78% in the Boise. Reservoirs got a little boost in storage from the rain and low snow melting, with the Payette reservoir system storage increasing from 56% of capacity a month ago to 59% now. The Boise reservoir system increased 33% of capacity to 38% of capacity, the same as a year ago. Streamflow forecasts for the April-July period decreased from a month ago and now range from 80-90% of average runoff. Streamflow runoff greater than 65% of average is needed to provide adequate irrigation in the Boise basin. The Boise Surface Water Supply Index indicates that water supplies will be adequate if the 50% Exceedance Forecast occurs. Irrigators should watch the weather closely the next few months to see if future precipitation will help or hurt the water supply situation.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		=====		Chance Of Exceeding *			=====	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
WEISER near Weiser (1)	APR-SEP	120	270	340	81	410	560	420
SF PAYETTE at Lowman	APR-JUL	250	310	350	80	390	450	438
	APR-SEP	290	355	400	81	445	510	494
DEADWOOD RESERVOIR Inflow (1,2)	APR-JUL	79	106	118	88	130	157	134
	APR-SEP	86	113	125	88	137	164	142
LAKE FORK PAYETTE near McCall	APR-JUL	61	70	76	89	82	91	85
	APR-SEP	63	73	79	89	85	95	89
NF PAYETTE at Cascade (1,2)	APR-JUL	275	390	440	90	490	605	488
	APR-SEP	315	430	480	91	530	645	530
NF PAYETTE nr Banks (2)	APR-JUL	380	480	550	86	620	720	643
	APR-SEP	405	515	590	86	665	775	690
PAYETTE nr Horseshoe Bend (1,2)	APR-JUL	925	1240	1390	86	1540	1860	1610
	APR-SEP	960	1340	1520	87	1700	2080	1755
BOISE near Twin Springs (1)	APR-JUL	365	480	530	83	580	695	636
	APR-SEP	385	515	575	83	635	765	691
SF BOISE at Anderson Ranch Dam (1,2)	APR-JUL	320	405	440	81	475	560	542
	APR-SEP	265	405	465	80	525	665	579
MORES CREEK near Arrowrock Dam	APR-JUL	24	48	65	50	82	106	131
	APR-SEP	27	52	69	50	86	111	137
BOISE near Boise (1,2)	APR-JUN	640	880	990	79	1100	1340	1258
	APR-JUL	655	995	1150	81	1300	1640	1414
	APR-SEP	745	1090	1240	81	1390	1730	1526

WEISER, PAYETTE, BOISE RIVER BASINS Reservoir Storage (1000 AF) - End of January					WEISER, PAYETTE, BOISE RIVER BASINS Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MANN CREEK	11.1	3.7	1.9	4.3	Mann Creek	1	66	78
CASCADE	693.2	448.4	338.5	448.4	Weiser River	3	78	86
DEADWOOD	164.0	58.0	53.6	86.3	North Fork Payette	8	95	96
ANDERSON RANCH	450.2	143.6	76.1	283.6	South Fork Payette	5	92	89
ARROWROCK	272.2	129.4	207.1	201.1	Payette Basin Total	14	90	92
LUCKY PEAK	293.2	117.3	107.6	106.6	Middle & North Fork Boise	5	82	84
LAKE LOWELL (DEER FLAT)	165.2	60.3	28.8	101.7	South Fork Boise River	9	76	85
					Mores Creek	5	53	64
					Boise Basin Total	16	69	78
					Canyon Creek	2	40	70

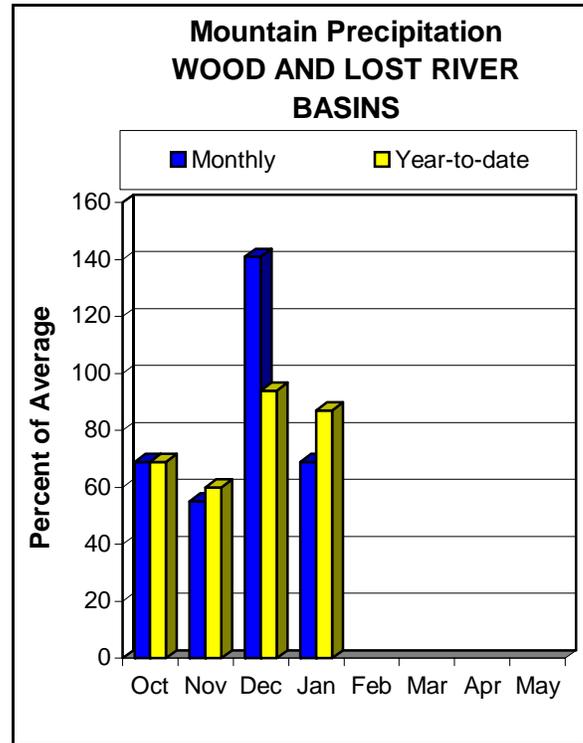
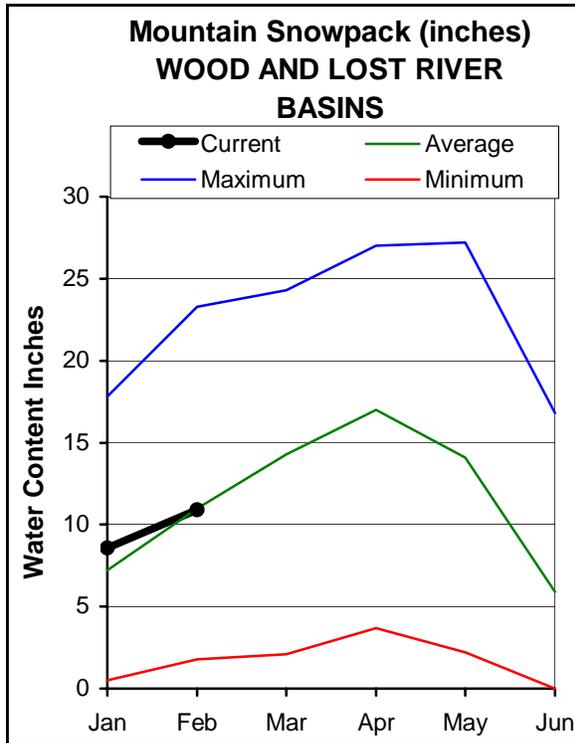
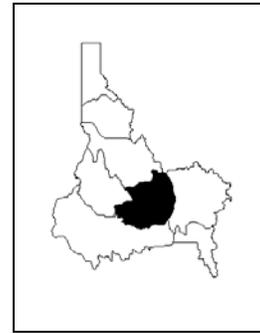
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

Some of the best snowpacks in the West are in Idaho's central mountains. However, much more snow is needed to make up for the past couple of dry years. January precipitation was 69% of average. Water year to date precipitation is 87% of average, 2<sup>nd</sup> highest in the state. Temperatures below freezing have kept most of the precipitation falling as snow in these central mountains and valleys even though many SNOTEL sites recorded their warmest January for their 14-year period of record. Snowpack percentages from west to east are: 84% of average for Camas Creek, 97% for Big Wood above Hailey, 110% for Little Wood, 102% for Big Lost, 79% for Little Lost, and 72% for Mud Lake area. Magic Reservoir is 10% of capacity, 15<sup>th</sup> lowest since 1917; however, 8 of the 15 lowest January 31 reservoir storage occurred before 1935. Little Wood Reservoir is 33% of capacity, up from 24% of capacity a month ago, slightly more than last year. Mackay Reservoir is storing 14,600 acre-feet, 5<sup>th</sup> lowest since 1926. The lowest January 31 storage occurred in 1938 with 12,600 acre-feet in storage. Streamflow forecasts decreased from a month ago and now range from 85-100% of average except for Camas Creek and Little Lost River at 66% of average. To reduce the risk of not having enough water, water managers should consider using the 90% or 70% Chance Exceedance Probability Forecasts because of the dry soils, inefficiency of the snowpack to produce streamflow following dry years, and assumption of normal future precipitation in the forecast equations. Water users who rely on Magic or Mackay irrigation water should anticipate irrigation water shortages, especially if future precipitation is below normal.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>					30-Yr Avg. (1000AF)	
		====		Chance Of Exceeding *		====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)		10% (1000AF)
BIG WOOD at Hailey (1)	APR-JUL	117	178	210	82	244	329	256
	APR-SEP	133	200	235	81	273	365	289
BIG WOOD near Bellevue	APR-JUL	78	121	156	83	195	260	188
	APR-SEP	86	130	166	83	206	272	201
CAMAS CREEK near Blaine	APR-JUL	30	50	66	66	85	116	100
	APR-SEP	31	51	67	66	86	117	101
BIG WOOD below Magic Dam (2)	APR-JUL	88	182	245	84	310	400	291
	APR-SEP	98	195	260	85	325	420	307
LITTLE WOOD near Carey (2)	MAR-JUL	46	66	80	83	94	114	96
	MAR-SEP	49	71	86	83	101	123	104
	APR-JUL	38	58	72	83	86	106	87
	APR-SEP	41	63	78	83	93	115	94
BIG LOST at Howell Ranch	APR-JUN	95	118	133	99	148	171	134
	APR-JUL	111	146	170	99	196	231	172
	APR-SEP	129	168	195	99	220	260	197
BIG LOST below Mackay Reservoir (2)	APR-JUL	78	112	135	95	158	191	142
	APR-SEP	102	139	164	95	188	228	173
LITTLE LOST blw Wet Creek	APR-JUL	13.2	17.8	21	68	24	29	31
	APR-SEP	16.0	22	26	67	30	36	39

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of January					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MAGIC	191.5	18.6	16.4	85.0	Big Wood ab Hailey	8	104	97
LITTLE WOOD	30.0	10.0	9.1	16.3	Camas Creek	5	62	84
MACKAY	44.4	14.6	19.1	27.7	Big Wood Basin Total	13	88	93
					Little Wood River	5	122	110
					Fish Creek	3	77	91
					Big Lost River	6	106	102
					Little Lost River	3	88	79
					Birch-Medicine Lodge Cree	2	86	73
Camas-Beaver Creeks	4	66	72					

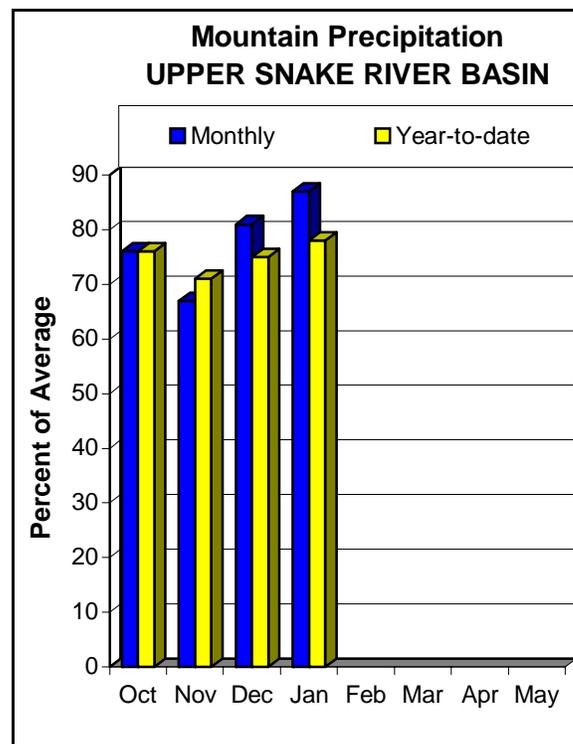
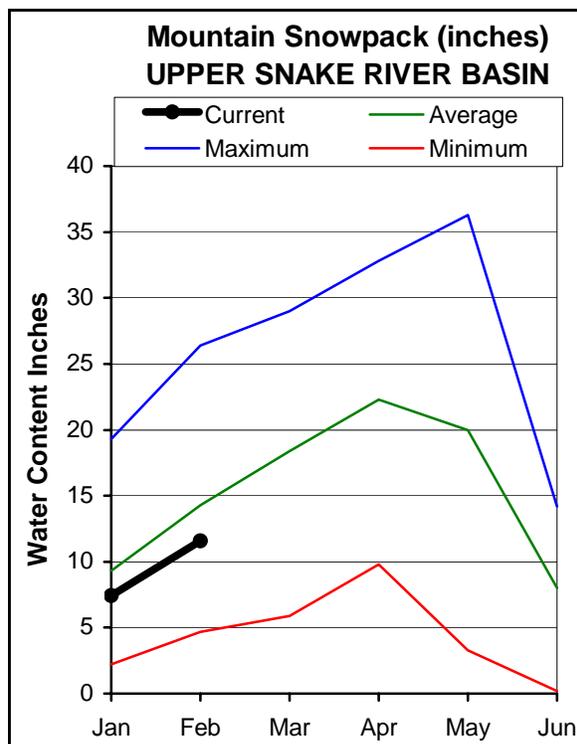
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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 RIVER BASIN

## FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

January precipitation across the upper Snake basin was 87% of average. Water year to date precipitation stands at 78% of average, even less than last year. Snowpacks across the region are similar, ranging from 75-85% of average, with the exception of the Portneuf basin at 56%. The Snake above Palisades snowpack is 82% of average and above American Falls is 79%. Combined reservoir storage in Palisades Reservoir and Jackson Lake is 34% of capacity, half of average. Overall, the combined reservoir storage for the 7 major reservoirs in the upper Snake is 44% of capacity, 65% of average, slightly better than a year ago. The Snake River near Heise is forecast at 75% of average while the Henrys Fork near Rexburg is forecast at 59%. Streamflow in the 80-90% of average range at Snake River near Heise is needed to provide adequate irrigation water supplies. A snow index for the Snake River above Jackson Lake based on 5 SNOTEL sites, shows that of the 27 years with a below average snowpack on February 1 since 1961, only 4 of these years ended with an average or better April 1 snowpack. Of these four years, one, 1983, was an El Nino year. Let's hope the storms keep coming in and make it 2 out of 5 years. Otherwise, water users should prepare for possible irrigation shortages. Spring precipitation is critical in these basins, and normal or better spring precipitation could boost the water supplies this year.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		Chance Of Exceeding *		Chance Of Exceeding *				
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
HENRYS FORK near Ashton (2)	APR-JUL	335	390	425	74	460	515	571
	APR-SEP	470	530	575	75	620	680	763
HENRYS FORK near Rexburg (2)	APR-JUL	640	805	915	59	1025	1195	1559
	APR-SEP	870	1050	1180	59	1310	1490	2013
FALLS near Squirrel (1,2)	APR-JUL	215	270	295	76	320	375	386
	APR-SEP	265	325	350	77	375	435	456
TETON near Driggs	APR-JUL	77	106	125	76	144	173	165
	APR-SEP	101	136	160	76	184	221	210
TETON near St. Anthony	APR-JUL	205	265	305	76	345	405	403
	APR-SEP	240	310	355	74	400	470	482
SNAKE near Moran (1,2)	APR-SEP	530	660	720	80	780	910	904
PACIFIC CREEK at Moran	APR-SEP	102	122	136	76	150	170	178
SNAKE above Palisades (2)	APR-JUL	1520	1750	1900	80	2050	2280	2370
	APR-SEP	1750	2010	2190	80	2370	2630	2735
GREYS above Palisades	APR-JUL	177	225	255	75	285	335	338
	APR-SEP	210	260	295	75	330	380	394
SALT near Etna	APR-JUL	143	201	240	70	280	335	342
	APR-SEP	181	250	295	70	340	410	419
PALISADES RESERVOIR INFLOW (1,2)	APR-JUL	1730	2260	2500	75	2740	3270	3331
	APR-SEP	2030	2630	2900	75	3170	3770	3875
SNAKE near Heise (2)	APR-JUL	2010	2400	2670	75	2940	3330	3561
	APR-SEP	2350	2800	3100	75	3400	3850	4159
WILLOW CREEK nr Ririe (2)	MAR-JUL	26	40	54	61	72	111	88
BLACKFOOT RESV INFLOW	APR-JUN	25	53	73	61	93	121	120
PORINEUF at Topaz	MAR-JUL	39	50	57	64	64	75	89
	MAR-SEP	50	62	71	65	80	92	109
AMERICAN FALLS RESV INFLOW (1,2)	APR-JUL	459	1415	1850	57	2280	3240	3242
	APR-SEP	610	1570	2000	57	2430	3390	3505

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

UPPER SNAKE RIVER BASIN  
Watershed Snowpack Analysis - February 1, 2003

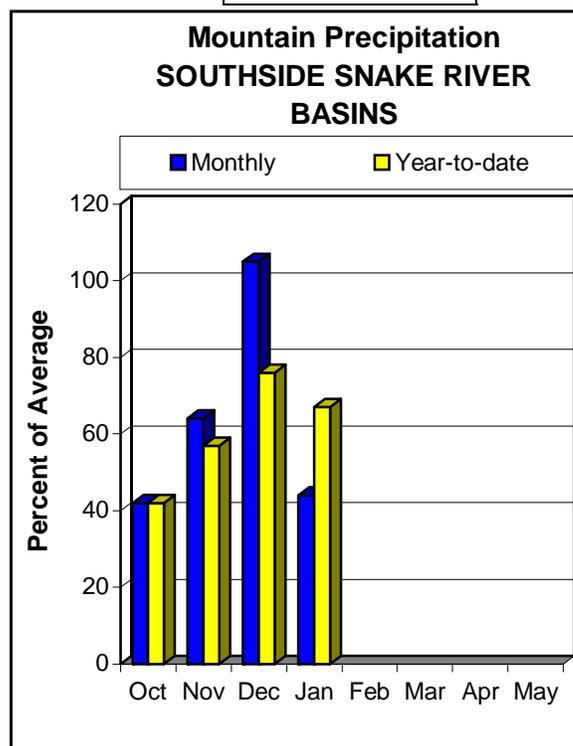
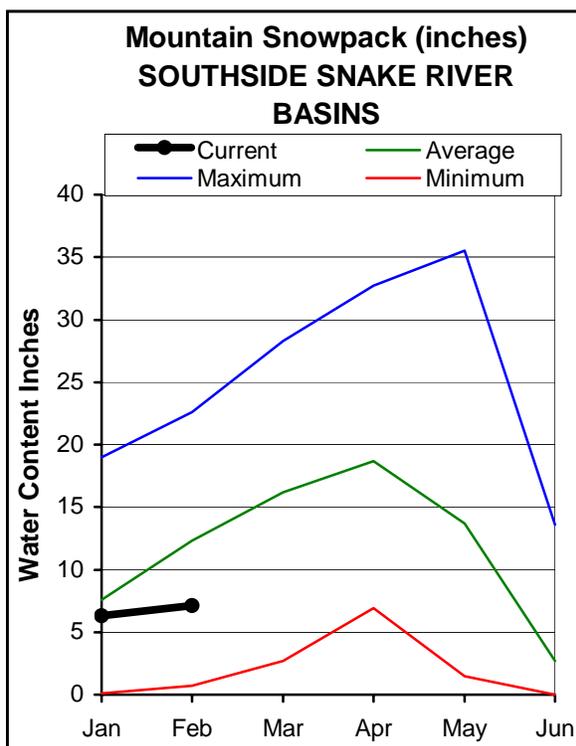
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HENRYS LAKE	90.4	67.8	54.5	83.2	Henry's Fork-Falls River	10	88	81
ISLAND PARK	135.2	71.5	83.2	102.2	Teton River	8	98	81
GRASSY LAKE	15.2	12.5	9.4	11.8	Henry's Fork above Rexburg	18	92	81
JACKSON LAKE	847.0	261.8	146.3	490.1	Snake above Jackson Lake	9	103	85
PALISADES	1400.0	500.9	489.2	1040.3	Gros Ventre River	4	90	76
RIRIE	80.5	33.1	29.4	35.8	Hoback River	6	92	76
BLACKFOOT		NO REPORT			Greys River	5	93	77
AMERICAN FALLS	1672.6	921.2	923.7	1125.4	Salt River	5	99	81
					Snake above Palisades	31	99	82
					Willow Creek	7	77	77
					Blackfoot River	4	82	76
					Portneuf River	6	52	56
					Snake abv American Falls	51	89	79

\* 90%, 70%, 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 1971-2000 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 FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

These basins south of the Snake River missed out on the storms that came across central and northern Idaho. January precipitation in these basins stretching from the Owyhee basin to the Bear River was the lowest in the state ranging from 20-60% of average. These basins also host the lowest water year to date precipitation in the state at 67% of average. Some of the lowest snowpacks in the state are in the Oakley basin at 52% of average, Salmon Falls at 58%, Bruneau at 63% and Owyhee at 56%. These low values are nothing to be proud of and are signs of the accumulative drought effects as also illustrated by the low reservoir storage. Owyhee Reservoir is 20% full, slightly better than last year and 6<sup>th</sup> lowest since 1936. Salmon Falls storage is slightly better than last year at only 25% of average. This storage is the 21<sup>st</sup> lowest for January 31 since 1922; however, only 4 of the lowest 20 years occurred after 1950. Oakley Reservoir is 18% full, slightly better than last year, but only half of average for January 31. Streamflow forecasts decreased considerably from last month and now call for 40-50% of average based on the 50% Exceedance Forecast. Irrigation shortages are expected. Water users should consider using a lesser forecast to reduce the risk of not having enough water as a result of accumulative drought effects. The Owyhee River rose in January from the rain and low snow, but much more snow or spring rains are needed to lengthen the Owyhee floating season and produce a Bruneau floating season.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)			Chance Of Exceeding * 50% (Most Probable) (% AVG.)		30% (1000AF) 10% (1000AF)	
OAKLEY RESV INFLOW	MAR-JUL	7.0	11.4	14.9	44	18.9	26	34		
	MAR-SEP	7.8	12.4	16.2	44	20	28	37		
OAKLEY RESV STORAGE	FEB-28	13.6	15.0	16.0	51	17.0	18.4	31		
	MAR-31	15.4	17.8	19.4	54	21	23	36		
	APR-30	16.0	20	22	54	24	28	41		
SALMON FALLS CREEK nr San Jacinto	MAR-JUN	24	36	46	52	57	75	89		
	MAR-JUL	24	37	47	51	58	77	93		
	MAR-SEP	26	39	49	50	61	80	98		
SALMON FALLS RESV STORAGE	FEB-28	13.7	16.6	18.6	31	21	23	60		
	MAR-31	19.1	26	30	43	34	41	70		
	APR-30	14.3	22	27	31	32	40	89		
BRUNEAU near Hot Spring	MAR-JUL	77	110	135	57	163	209	237		
	MAR-SEP	81	115	141	57	170	218	248		
OWYHEE near Gold Creek (2)	MAR-JUL	4.9	10.3	14.4	42	20	30	34		
OWYHEE nr Owyhee (2)	APR-JUL	13.7	28	37	45	55	82	82		
OWYHEE near Rome	FEB-JUL	113	201	275	42	361	509	655		
OWYHEE RESV INFLOW (2)	FEB-JUL	134	230	310	44	402	559	700		
	FEB-SEP	138	235	315	43	407	564	730		
	APR-SEP	57	117	170	40	233	344	428		
SUCCOR CK nr Jordan Valley	FEB-JUL	3.1	6.8	9.3	48	14.1	21	19.3		
SNAKE RIVER at King Hill (1,2)	APR-JUL	667	1481	1850	61	2220	3030	3045		
SNAKE RIVER near Murphy (1,2)	APR-JUL	655	1511	1900	61	2290	3150	3092		
SNAKE RIVER at Weiser (1,2)	APR-JUL	294	2251	3140	55	4030	5990	5765		
SNAKE RIVER at Hells Canyon Dam (1,2)	APR-JUL	550	2647	3600	55	4555	6650	6493		
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	5685	12091	15000	70	17910	24310	21550		

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

SOUTHSIDE SNAKE RIVER BASINS  
Watershed Snowpack Analysis - February 1, 2003

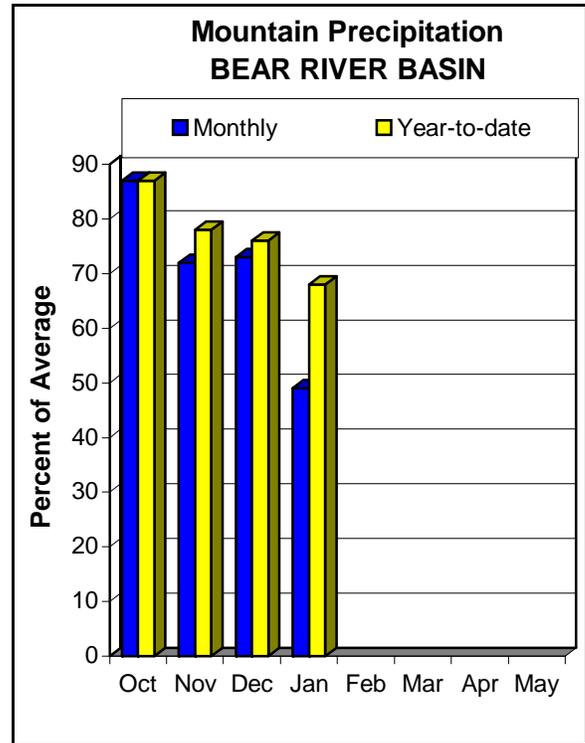
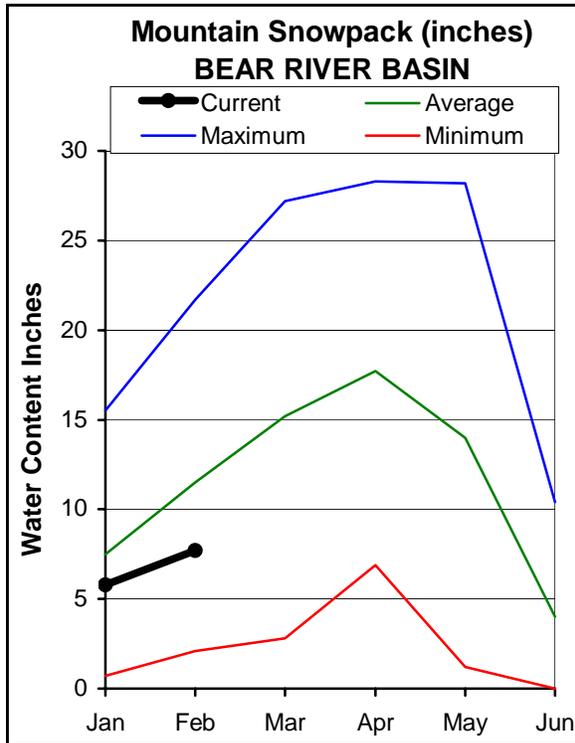
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
OAKLEY	74.5	13.4	12.0	28.2	Raft River	2	43	56
SALMON FALLS	182.6	13.8	12.4	55.7	Goose-Trapper Creeks	3	42	52
WILDHORSE RESERVOIR	71.5	19.8	21.6	38.9	Salmon Falls Creek	7	47	58
OWYHEE	715.0	140.9	135.9	438.3	Bruneau River	8	51	63
BROWNLEE		NO REPORT			Owyhee Basin Total	20	39	56

\* 90%, 70%, 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 1971-2000 base period.

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- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# BEAR RIVER BASIN FEBRUARY 1, 2003



## WATER SUPPLY OUTLOOK

January precipitation was half of average in the Bear River, ranging from 25% of average in Utah to 80% in Wyoming. The water year to date precipitation is 68% of average, lowest in the state along with other basins south of the Snake River. Snowpack percentages range from 68% of average in the Smith, Thomas and Montpelier basins to 53% in the Cub River. Overall, the Bear River basin is 62% of average and has only three-quarters the amount of snow as last year at this time. A 15 station snow index for the Bear basin shows the snowpack is the 6<sup>th</sup> lowest since 1975 and the same as on February 1, 2001, and 1987. Bear Lake has 358,200 acre-feet; last year it had 582,700 acre-feet. This is the 9<sup>th</sup> lowest January 31 storage since 1922. However, of the 10 lowest January 31 storage levels, only two occurred after 1943; these were in 1993 and 1995. Streamflow forecasts remain the lowest in the state, reflecting the cumulative drought impacts and low runoff levels the past two years, and call for a meager 32% of average for the Bear River below Stewart Dam. Water users should be prepared for very low runoff volumes for the third year in a row, especially if future precipitation is below average.

BEAR RIVER BASIN  
Streamflow Forecasts - February 1, 2003

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<===== Drier =====>>		=====		===== Wetter =====>>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Bear R nr UT-WY State Line	APR-SEP	57	69	79	63	90	110	125
Woodruff Narrows Res inflow	APR-SEP	26	43	56	39	71	97	142
Smiths Fork nr Border	APR-JUL	38	49	58	56	69	88	103
	APR-SEP	47	59	69	59	81	102	118
Bear River blw Stewart Dam	APR-JUL	58	79	93	32	138	198	288
	APR-SEP	71	96	113	35	162	232	327

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of January					BEAR RIVER BASIN Watershed Snowpack Analysis - February 1, 2003			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BEAR LAKE	1421.0	358.2	582.7	906.1	Smiths & Thomas Forks	4	82	69
MONPELIER CREEK		NO REPORT			Bear River ab WY-ID line	11	76	62
					Montpelier Creek	2	82	68
					Mink Creek	1	66	58
					Cub River	1	58	53
					Bear River ab ID-UT line	18	73	62
					Malad River	1	44	56

\* 90%, 70%, 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 1971-2000 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. 2005).**

#### **Panhandle River Basins**

Kootenai R at Leonia, ID  
+ Lake Koocanusa (Storage Change)  
Boundary Ck nr Porthill, ID – No Corrections  
Moyie R at Eastport, ID – No Corrections  
Smith Creek nr Porthill, ID – No Corrections  
Clark Fork R at Whitehorse Rapids, ID  
+ Hungry Horse (Storage Change)  
+ Flathead Lake (Storage Change)  
+ Noxon Rapids Resv (Storage Change)  
Pend Oreille Lake Inflow, ID  
+ 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, ID  
+ Priest Lake (Storage Change)  
NF Coeur d'Alene R at Enaville, ID - No Corrections  
St. Joe R at Calder, ID - No Corrections  
Spokane R nr Post Falls, ID  
+ 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 Resv Inflow, ID  
+ Clearwater R nr Peck, ID  
- Clearwater R at Orofino, ID  
+ Dworshak Resv (Storage Change)  
Clearwater R at Orofino, ID - No Corrections  
Clearwater R at Spalding, ID  
+ Dworshak Resv (Storage Change)

#### **Salmon River Basin**

Salmon R at Salmon, ID - No Corrections  
Lemhi R nr Lemhi, ID – No Corrections  
MF Salmon R at MF Lodge, ID – No Corrections  
Salmon R at White Bird, ID - No Corrections

#### **Weiser, Payette, Boise River Basins**

Weiser R nr Weiser, ID - No Corrections  
SF Payette R at Lowman, ID - No Corrections  
Deadwood Resv Inflow, ID  
+ Deadwood R blw Deadwood Resv nr Lowman  
+ Deadwood Resv (Storage Change)  
Lake Fork Payette R nr Mccall, ID – No Corrections  
NF Payette R at Cascade, ID  
+ Cascade Resv (Storage Change)  
+ Payette Lake (Storage Change)

NF Payette R nr Banks, ID  
+ Cascade Resv (Storage Change)  
+ Payette Lake (Storage Change)  
Payette R nr Horseshoe Bend, ID  
+ Cascade Resv (Storage Change)  
+ Deadwood Resv (Storage Change)  
+ Payette Lake (Storage Change)  
Boise R nr Twin Springs, ID - No Corrections  
SF Boise R at Anderson Ranch Dam, ID  
+ Anderson Ranch Resv (Storage Change)  
Boise R nr Boise, ID  
+ Anderson Ranch Resv (Storage Change)  
+ Arrowrock Resv (Storage Change)  
+ Lucky Peak Resv (Storage Change)

#### **Wood and Lost River Basins**

Big Wood R at Hailey, ID - No Corrections  
Big Wood R abv Magic Resv, ID  
+ Big Wood R nr Bellevue, ID  
+ Willow Ck  
Camas Ck nr Blaine – No Corrections  
Big Wood R blw Magic Dam nr Richfield, ID  
+ Magic Resv (Storage Change)  
Little Wood R abv High Five Ck, ID – No Corrections  
Little Wood R nr Carey, ID  
+ Little Wood Resv (Storage Change)  
Big Lost R at Howell Ranch, ID - No Corrections  
Big Lost R blw Mackay Resv nr Mackay, ID  
+ Mackay Resv (Storage Change)  
Little Lost R blw Wet Ck nr Howe, ID - No Corrections

#### **Upper Snake River Basin**

Henrys Fork nr Ashton, ID  
+ Henrys Lake (Storage Change)  
+ Island Park Resv (Storage Change)  
Henrys Fork nr Rexburg, ID  
+ Henrys Lake (Storage Change)  
+ Island Park Resv (Storage Change)  
+ Grassy Lake (Storage Change)  
+ Diversions from Henrys Fk btw Ashton to St. Anthony, ID  
+ Diversions from Henrys Fk btw St. Anthony to Rexburg, ID  
+ Diversions from Falls R abv nr Ashton, ID  
+ Diversions from Falls R nr Ashton to Chester, ID  
Falls R nr Ashton, ID  
+ Grassy Lake (Storage Change)  
+ Diversions from Falls R abv nr Ashton, ID  
Teton R nr Driggs, ID - No Corrections  
Teton R nr St. Anthony, ID  
- Cross Cut Canal into Teton R  
+ Sum of Diversions for Teton R abv St. Anthony, ID  
Snake R nr Moran, WY  
+ Jackson Lake (Storage Change)  
Pacific Ck at Moran, WY – No Corrections  
Snake R abv Palisades, WY  
+ Jackson Lake (Storage Change)

Greys R abv Palisades, WY – No Corrections  
Salt R abv Palisades, WY – No Corrections  
Snake R nr Irwin, ID  
+ Jackson Lake (Storage Change)  
+ Palisades Resv (Storage Change)  
Snake R nr Heise, ID  
+ Jackson Lake (Storage Change)  
+ Palisades Resv (Storage Change)  
Willow Ck nr Ririe, ID  
+ Ririe Resv (Storage Change)  
Blackfoot Reservoir Inflow, ID  
+ Blackfoot Reservoir releases  
+ Blackfoot Resv (Storage Change)  
Snake R nr Blackfoot, ID  
+ Palisades Resv (Storage Change)  
+ Jackson Lake (Storage Change)  
+ Diversions from Snake R btw Heise and Shelly  
+ Diversions from Snake R btw Shelly and Blackfoot  
Portneuf R at Topaz, ID - No Corrections  
American Falls Resv Inflow, ID  
+ Snake River at Neeley  
+ All Corrections made for Henrys Fk nr Rexburg, ID  
+ Jackson Lake (Storage Change)  
+ Palisades Resv (Storage Change)  
+ Diversions from Snake R btw Heise and Shelly  
+ Diversions from Snake R btw Shelly and Blackfoot  
**Southside Snake River Basins**  
Oakley Resv Inflow, ID  
+ Goose Ck abv Trapper Ck  
+ Trapper Ck nr Oakley  
Salmon Falls Ck nr San Jacinto, NV - No Corrections  
Bruneau R nr Hot Springs, ID - No Corrections  
Owyhee R nr Gold Ck, NV  
+ Wildhorse Resv (Storage Change)  
Owyhee R nr Owyhee, NV  
+ Wildhorse Resv (Storage Change)  
Owyhee R nr Rome, OR – No Corrections  
Owyhee Resv Inflow, OR  
+ Owyhee R blw Owyhee Dam, OR  
+ Owyhee Resv (Storage Change)  
+ Diversions to North and South Canals  
Succor Ck nr Jordan Valley, OR - No Corrections  
Snake R at King Hill, ID - No Corrections  
Snake R nr Murphy, ID - No Corrections  
Snake R at Weiser, ID - No Corrections  
Snake R at Hells Canyon Dam, ID  
+ Brownlee Resv (Storage Change)  
**Bear River Basin**  
Bear R nr UT-WY Stateline, UT – No Corrections  
Bear R abv Resv nr Woodruff, UT – No Corrections  
Smiths Fork nr Border, WY - No Corrections  
Bear R blw Stewart Dam nr Montpelier, ID  
+ Bear R blw Stewart Dam  
+ Rainbow Inlet Canal

**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 volumes for each reservoir, and defines the storage volumes NRCS uses when reporting capacity and current storage. In most cases, NRCS reports usable storage, which includes active and inactive storage. **(Revised Dec. 2005)**

<b><u>Basin/ Reservoir</u></b>	<b><u>Dead Storage</u></b>	<b><u>Inactive Storage</u></b>	<b><u>Active Storage</u></b>	<b><u>Surcharge Storage</u></b>	<b><u>NRCS Capacity</u></b>	<b><u>NRCS Capacity Includes</u></b>
<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	---	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	---	1452.00	2016.00	---	3468.0	Inactive+Active
<b><u>Weiser/Boise/Pavette Basins</u></b>						
Mann Creek	1.61	0.24	11.10	---	11.1	Active
Cascade	---	46.70	646.50	---	693.2	Inactive+Active
Deadwood	---	---	161.90	---	161.9	Active
Anderson Ranch	24.90	37.00	413.10	---	450.1	Inactive+Active
Arrowrock	---	---	272.20	---	272.2	Active
Lucky Peak	---	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	---	---	30.00	---	30.0	Active
Mackay	0.13	---	44.37	---	44.4	Active
<b><u>Upper Snake Basin</u></b>						
Henrys Lake	---	---	90.40	---	90.4	Active
Island Park	0.40	---	127.30	7.90	135.2	Active+Surcharge
Grassy Lake	---	---	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	---	---	348.73	---	348.7	Active
American Falls	---	---	1672.60	---	1672.6	Active
<b><u>Southside Snake Basins</u></b>						
Oakley	---	---	75.60	---	75.6	Active
Salmon Falls	48.00	5.00	182.65	---	182.6	Active+Inactive
Wildhorse	---	---	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	5.0 MAF	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 1971-2000. 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)	(% 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

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