United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
February 1, 2024

Snow Surveyors took advantage of spring-like temperatures during recent snow measurements
Pictured: Josh Miller, NRCS Idaho Falls, Photo courtesy of Tracie O'Neill, NRCS Idaho Falls

January was a wild weather ride. Record warm temperatures at the end of the month made it easy to forget it was bitterly cold and snowy earlier in January. Stanley, a mountain town in the heart of central Idaho, saw a 78°F difference between the lowest (-28°F on 1/13/24) and highest temperature observations (50°F on 1/31/24) during January (source: National Weather Service Pocatello). For Idaho's snowpack to continue to build and ensure adequate water supply, a return to more winter-like weather in February is needed.

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

For more water supply and resource management information:

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

To join a free email subscription list, please contact us by email at: idboise-nrcs-snow@usda.gov

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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 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 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.

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife $r^2 < 0.34$) will no longer be issued. This will primarily affect the January and June forecasts, with little change anticipated for the February, March, April, and May forecasts. For more information, please contact Erin Whorton (erin.whorton@usda.gov)

February 2024: Idaho Water Supply Summary

Overview

January was a wild ride! Mid-month, we were swaddled in our warmest parkas and clutching snow shovels as cold, arctic air brought blizzards and snow to Idaho. By the end of January, we were in t-shirts and wondering if spring came two months early with high temperature records being set across Idaho. On February 1, snowpack and total water year precipitation conditions mirror each other with well below normal conditions observed north of the Snake River Plain and above normal conditions to the south.

Streamflow forecasts strongly reflect this difference between wetter and drier parts of the state. Streamflow is predicted to be much lower than normal in basins where snowpack conditions are also low. Although reservoir storage is above normal, the lack of snow will impact water supply this irrigation season if these mild winter conditions continue. Water supply will likely be sufficient in the Southern Snake River and Bear River basins this year because the reservoir storage is also supported by the above normal snowpack in that area. As always, unknown spring weather, how quickly the snowpack melts off, and timing of irrigation demand will affect the final equation of whether water supply was adequate in water year 2024.

Weather, climate and drought outlooks

Freezing levels fluctuated in January, and February is off to the same start. Southern, Central and Eastern Idaho will likely see freezing levels rise in early February that may affect whether precipitation falls as rain or snow in the lower elevation mountains. We could also see some snowmelt at low elevation SNOTEL stations. The 10-day and 5-day precipitation forecast indicate that drier than normal conditions will continue in central and northern Idaho. Higher than normal or near normal precipitation is expected in portions of southern, eastern and central Idaho the first week of February. Since February 1, we've already seen large improvements (~10 to 30%) increase in snowpack percentages compared to the 30-year median in the Wood, Lost and Upper Snake River basins. Conditions can change drastically as we write these reports; so keep an eye on the latest snowpack conditions with our interactive map or daily ready-to-print maps. Looking at the big picture, NOAA's Climate Prediction Center (CPC) one-month outlook indicates that, overall, February will likely be warmer and drier than usual.

The CPC forecasts a continuation of El Niño conditions this winter with a 73% chance of transitioning to El Niño-Southern Oscillation (ENSO) neutral conditions between April and June. El Niño is the warm phase of the ENSO climate pattern with peak impacts typically occurring January through March. The three-month seasonal climate outlook for the February through March period reflects this, with warmer and drier than normal conditions likely to continue this winter.

Currently, 56% of Idaho lands are abnormally dry or are in drought. This is twice as much area compared to three months ago; reflecting the below normal snowpack and total water year precipitation conditions. The seasonal drought outlook forecasts drought will persist in northern and central Idaho with drought conditions continuing to develop to the south.

Snowpack

Snow water equivalent (SWE) gains occurred in all basins in Idaho during January despite periods of dry, warm weather (Fig. 3). Every basin saw some improvement in snowpack conditions. The Snake River Plain remains the dividing boundary between basins with below or above normal snowpack. The snowpack is well below normal in all basins north of the Snake River Plain (53 to 81%) and well above normal to the south (105 to 132%). The bottom line is, north of the Snake River Plain and in the Snake River headwaters, the snowpack at the majority of the snow measurement sites (both SNOTEL and snow courses) is below the 20th percentile. These basins are experiencing a snow drought.

Wet, cold storms came through Idaho in mid-January and were responsible for the majority of SWE gains we saw last month. After this arctic front passed, basin-wide SWE stagnated from reduced precipitation and warmer than normal temperatures during the last part of January. Increased freezing levels meant precipitation often fell as rain rather than snow. Thanks to these warm temperatures, 7-day average streamflow increased in low elevation areas where snowpack melt occurred, notably in the Southern Snake River basins. The USGS Owyhee River near Rome stream gauge clearly shows the increase in streamflow around January 19 as temperatures warmed.

The National Water and Climate Center publishes SWE projection graphs that display a range of snowpack accumulation scenarios using observed SWE data. Within this range of potential outcomes, the 50% projection represents what would happen under normal SWE accumulation conditions. In low snowpack years like this one, these projections are helpful to see what amount of precipitation is needed to reach normal conditions by the median peak snowpack date. In the Snake River above Heise basin for example, this area needs well above normal snowfall (between the 70th to 90th percentile) to end the water year 2024 winter with a normal snowpack.

Precipitation

Total water year precipitation (WYP) is well below normal north of the Snake River Plain and well above to near normal to the south (Fig. 2). This is the same pattern observed in the snowpack (Fig. 3). In general, basin-wide WYP percentages are closer to normal compared to the snowpack percentages, but the difference between these two metrics varies between basins.

Storm tracks favored southern Idaho during January (Fig. 1) with Southern Snake, Bear River, and the Willow-Blackfoot-Portneuf basins receiving well above normal precipitation

(125 to 192%). The rest of the state received below to slightly above normal precipitation during January (79 to 115%). The middle of the month was very wet from January 9 to 19, with all basins receiving above normal precipitation. This wet period started even sooner (January 4) in a few of the Southern Snake basins. The latter half of January was mostly very dry and warm across the state.

Water supply

The good news is that reservoir storage in Idaho is near or above normal on February 1. Water supply for irrigators in the Southern Snake River, Bear River, and potentially in the Willow-Blackfoot-Portneuf watershed looks sufficient with both excellent reservoir storage and above normal snowpack in these basins. The below normal snowpack is cause for water supply concerns elsewhere, especially for users reliant on near normal natural flow.

The Boise River system has above normal storage at 118% of normal (66% full) at report time. Reservoir storage is accruing this winter at a slightly faster rate than normal in the Boise system due to warm temperatures and rainfall. Snowpack in the Boise Basin is higher than other West Central basins. Given the well above normal reservoir storage and adequate snowpack in Boise, water supply looks reasonably good in this basin at this point in time. Reservoir storage in the Payette River system is 105% of normal (67% full), however, snowpack is only 69% of normal. The U.S. Army Corps of Engineers (USACE), in coordination with the U.S. Bureau of Reclamation (USBR), forecasts 1,200 KAF for the Boise River's February through July streamflow, which is 80% of average. The NRCS forecast for the primary snowmelt runoff period (April to July) at Boise River near Boise predicts below normal runoff at 85% of normal (955 KAF).

Total storage in the Upper Snake Reservoir system above Milner Dam is ~123% of normal (76% full) at publication time with reservoir storage accruing at a faster rate than average. Combined Jackson Lake and Palisades storage above Heise is 119% of normal (79% full). The NRCS forecast for the primary snowmelt runoff period at Heise (April to July) predicts below normal runoff at 75% of normal (2,360 KAF). The coordinated BOR and USACE forecast at Heise for the February to July period is 3,000 KAF (81% of normal).

February 1 streamflow forecasts reflect the current mountain snowpack and total water year precipitation conditions. Even relatively small variations in these metrics affect the streamflow outcome as demonstrated in northern Idaho. Streamflow forecasts are slightly higher in the Pend Oreille-Kootenai (70 to 85%) compared to the Coeur d'Alene-St. Joe (57 to 68%) and Clearwater basins (63 to 80%). Although the bottom line is that all of the streamflow forecasts in northern Idaho are well below normal. It's especially concerning that even the 10% and 30% exceedance forecasts (the "wettest" scenario forecasts) are near or below the 30-year median streamflow volume. In other words – it's very likely that streamflow volumes in northern Idaho will be significantly below normal this summer.

For the primary forecast period, below normal streamflow is predicted in all basins north of the Snake River Plain. Streamflow in the West Central basins range from 73 to 85% of normal, 65 to 75% in the Salmon Basin, and 60 to 88% in the Wood and Lost Basins for the 50% exceedance forecasts. Upper Snake basin forecasts reflect basin-wide differences in snowpack. Streamflow forecasts range from 63 to 89% in the headwaters above Palisades, to 75 to 86% in the Henrys Fork-Teton, and ~113% of normal in the Willow-Blackfoot-Portneuf Basin. Streamflow forecasts in the Southern Snake basins for the primary period (typically March to July) range from 122 to 161% of normal.

Streamflow, snowpack, and precipitation data for each basin can be accessed in basin reports or on the NRCS interactive map. Replacements for the daily, ready-to-print maps of SWE and total water year precipitation maps are available on the National Water and Climate website.

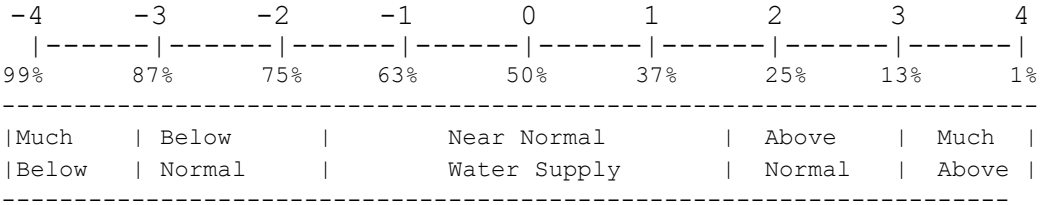
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) February 1, 2024

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 1991 to present.

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

BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	**-2.8**	**2021**	**NA**
Clearwater	**-3.3**	**2001**	**NA**
Salmon	**-2.1**	**2004**	**NA**
Weiser	**-2.1**	**2004**	**NA**
Payette	**-1.8**	**2002**	**NA**
Boise	**-0.4**	**2014**	**- 1.7**
Big Wood above Hailey	**-1.1**	**2014**	**- 2.7**
Big Wood	**0.6**	**2009**	**0.7**
Camas Creek nr Blaine	**-0.1**	**2010**	**NA**
Little Wood	**-0.6**	**2008**	**- 1.5**
Big Lost	**-0.1**	**2016**	**0.7**
Little Lost	**-0.9**	**2015**	**1.7**
Teton	**-0.9**	**2004**	**- 3.9**
Henrys Fork	**-0.4**	**1993**	**- 2.9**
Snake (Heise)	**-0.9**	**2016**	**- 1.5**
Oakley	**1.8**	**2020**	**0.7**
Salmon Falls above Jackpot	**0.7**	**1999**	**NA**
Salmon Falls	**1.3**	**1995**	**-0.7**
Bruneau	**1.1**	**1996**	**NA**
Owyhee	**2.1**	**2019**	**- 2.2**
Bear River	**1.7**	**2012**	**- 3.7**

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



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

Figure 1:
Monthly Precipitation
January 2024

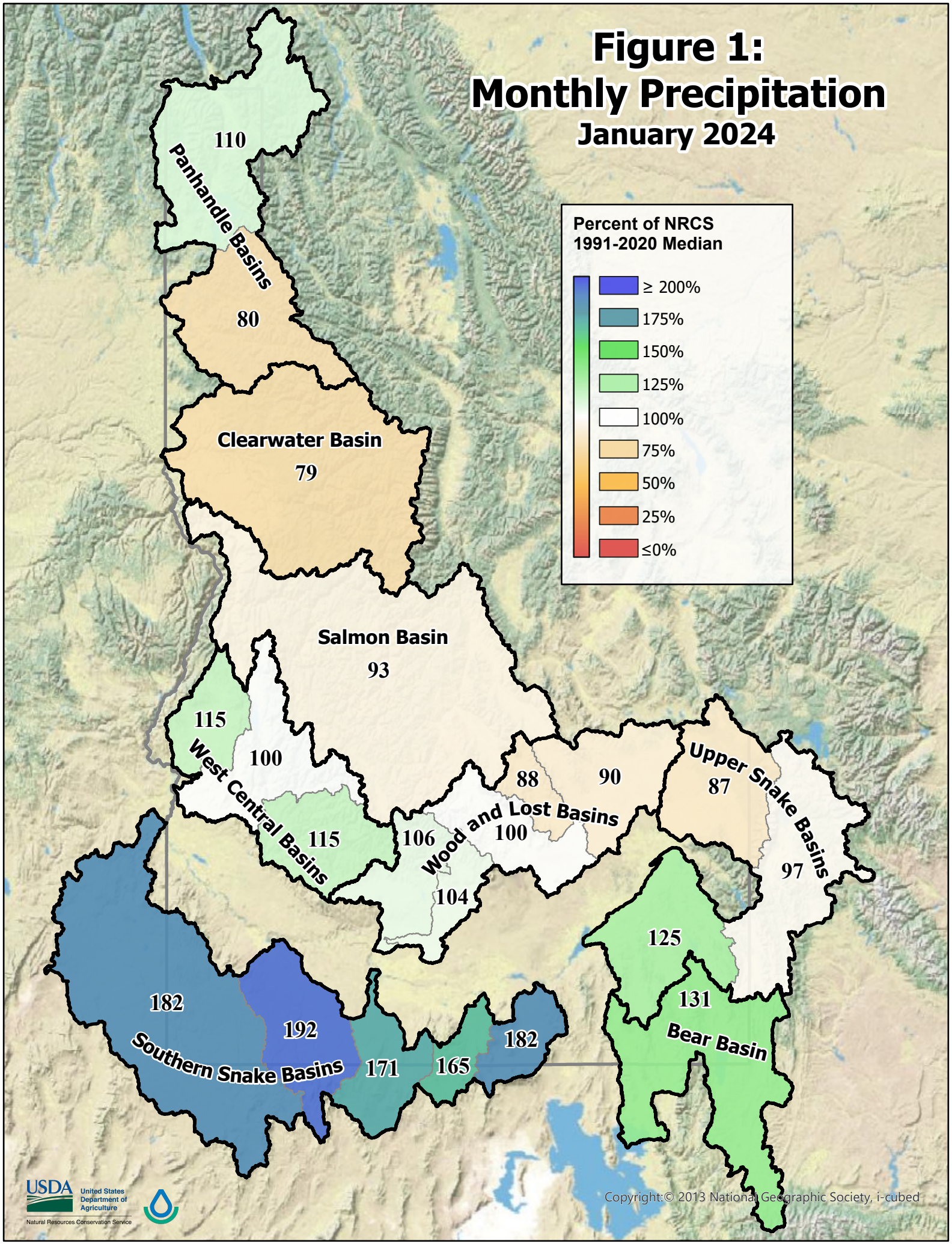
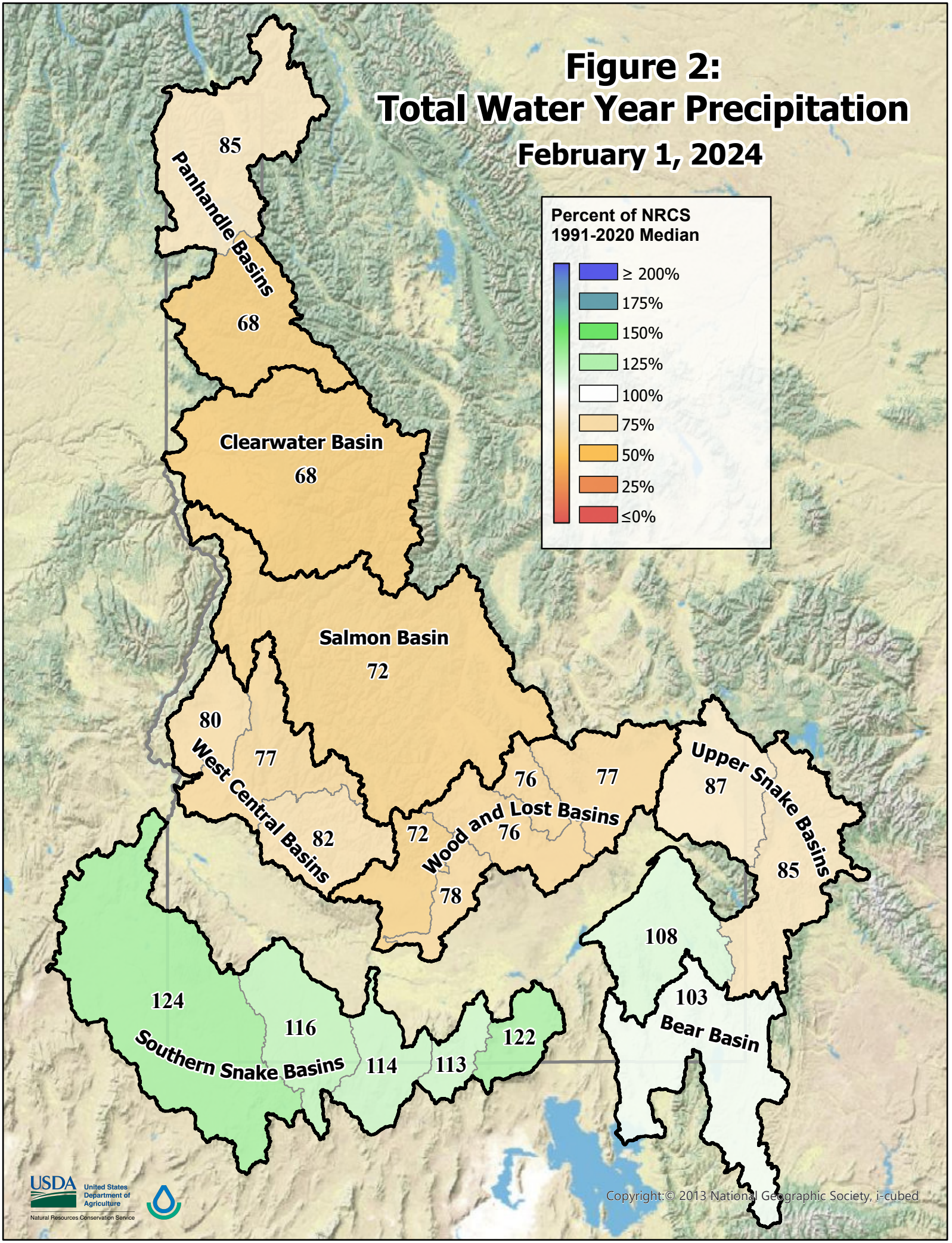


Figure 2:
Total Water Year Precipitation
February 1, 2024



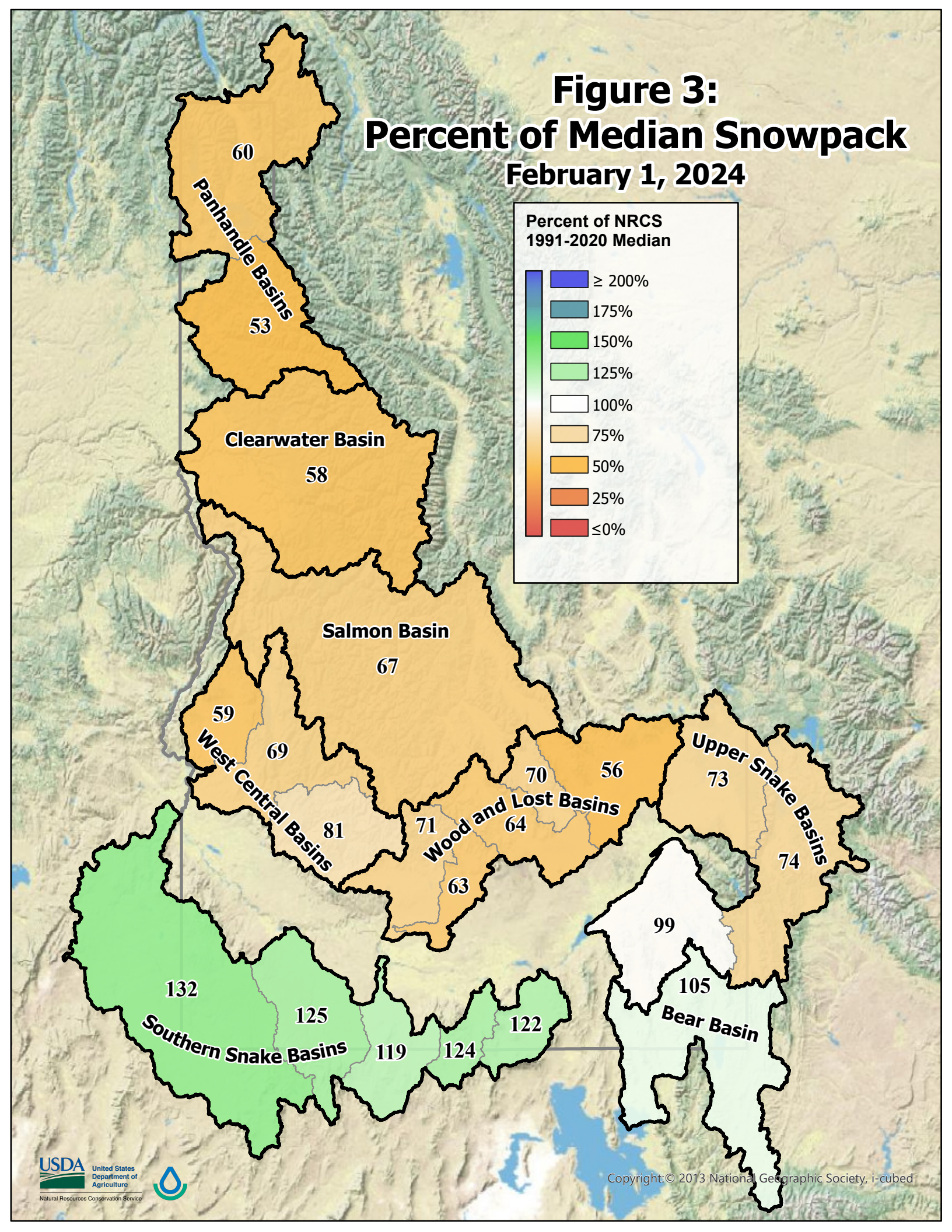


Figure 3:
Percent of Median Snowpack
February 1, 2024
Percent of NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤0%
60
Panhandle Basins
53
Clearwater Basin
58
Salmon Basin
67
59
West Central Basins
69
81
70
56
Wood and Lost Basins
71
64
63
Upper Snake Basins
73
74
99
105
Bear Basin
132
Southern Snake Basins
125
119
124
122
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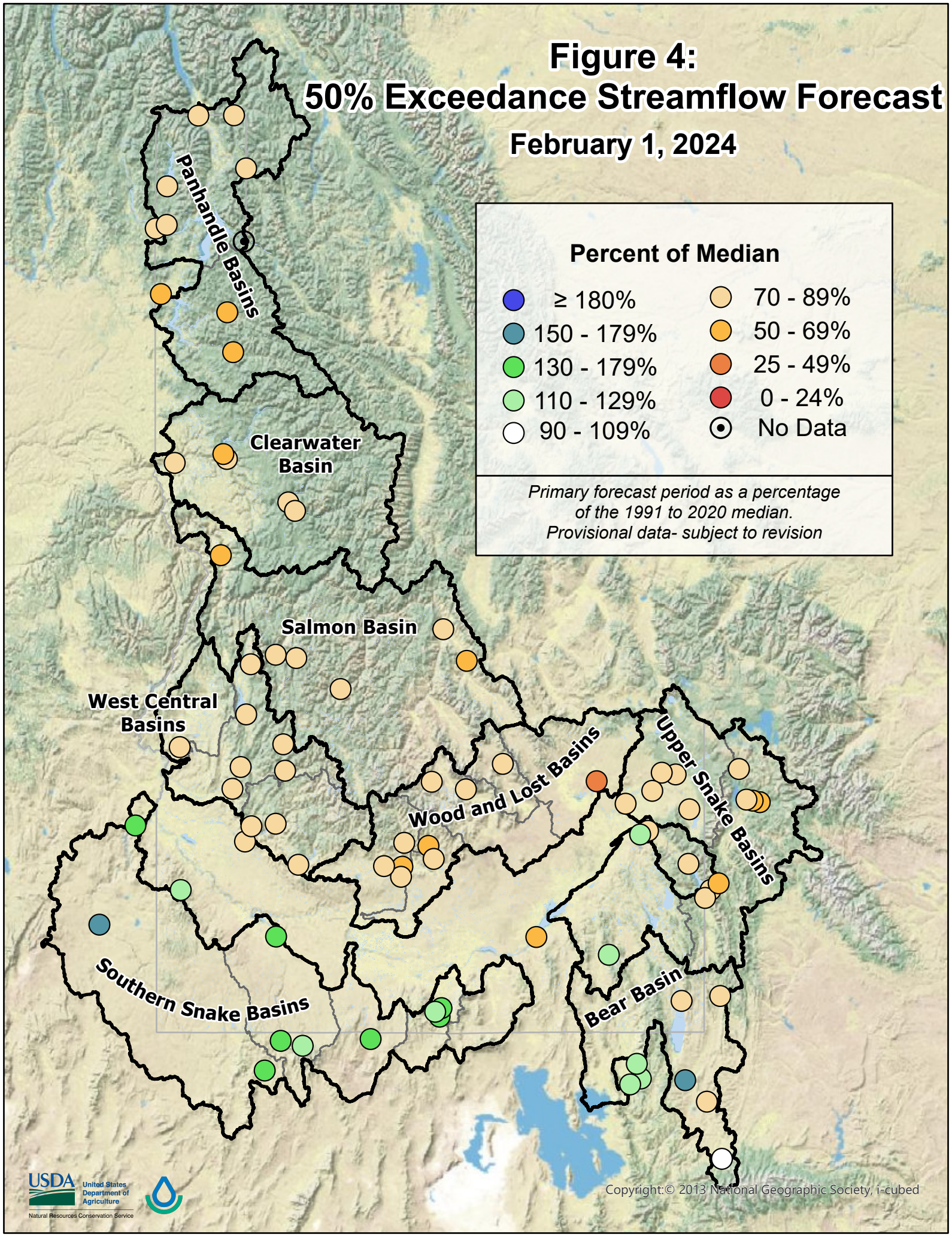
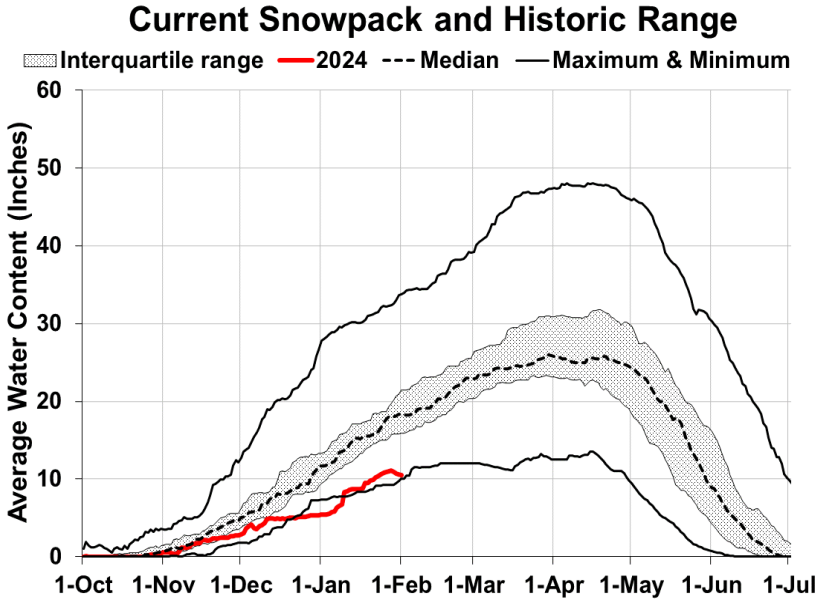
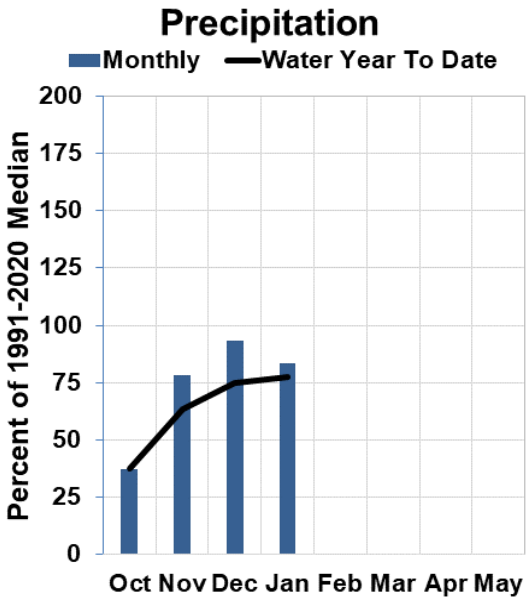
Figure 4:
50% Exceedance Streamflow Forecast
February 1, 2024



Panhandle Region

February 1, 2024





WATER SUPPLY OUTLOOK

Precipitation in January was ~80 to 110% of normal (Fig. 1). Water year 2024 continues to be below normal with February 1 total water year precipitation at ~70 to 85% (Fig. 2). Although snowpack conditions slightly improved since January 1, abnormally warm temperatures and multiple rain-on-snow events in January kept a majority of the snow measurement sites within the five lowest snow measurements on record for February 1. Snowpack ranges from ~50 to 60% of normal on February 1 (Fig. 3). With these basins halfway through their normal snow accumulation season (peak snowpack occurs near April 1), it is more and more likely this year's snowpack peak will end well below normal. According to the National Water and Climate Center's snowpack projection graphs, even if there is normal snow accumulation during the remainder of winter, both the Coeur d'Alene-St. Joe and Pend Orielle-Kootenai basins will end with well below normal snowpacks. Even if we received near record snow accumulation during the remainder of the season, these basins could still fall short of their normal peak. NOAA's 30-day outlook predict conditions are likely to be drier and warmer in February. This suggests snow drought will persist during this critical part of winter.

Reservoir storage in the Panhandle lakes on February 1: Coeur d'Alene is 94% of normal (42% full), Pend Oreille is 93% of normal (37% full), and Priest Lake is 191% of normal (88% full). Streamflow forecasts for April through July are ~55 to 85% of normal at the 50% exceedance level in the Panhandle basins.

Panhandle Region Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Kootenai R at Leonia 1 & 2	APR-JUL	3740	5060	5660	85%	6260	7580	6680
	APR-SEP	4490	5820	6420	85%	7020	8350	7560
Boundary Ck nr Porthill	APR-JUL	55	75	89	75%	103	123	119
	APR-SEP	62	82	96	77%	110	130	124
Moyie R at Eastport	APR-JUL	163	230	275	73%	320	385	375
	APR-SEP	167	235	280	72%	325	395	390
Priest R nr Priest River 2	APR-JUL	380	550	660	79%	770	940	840
	APR-SEP	375	550	665	76%	780	955	880
Pend Oreille Lake Inflow 2	APR-JUL	4680	6790	8220	70%	9650	11800	11700
	APR-SEP	5180	7390	8890	71%	10400	12600	12600
Priest R Outflow NR Coolin	APR-JUL	320	445	525	76%	605	730	690
	APR-SEP	350	475	560	77%	645	770	725
Pend Oreille R bl Box Canyon	APR-JUL	5160	7260	8680	74%	10100	12200	11700
	APR-SEP	5670	7880	9390	74%	10900	13100	12700
NF Coeur dAlene R at Enaville	APR-JUL	143	330	455	64%	580	765	715
	APR-SEP	183	370	500	67%	630	815	750
St. Joe R at Calder 2	APR-JUL	360	570	715	68%	860	1070	1050
	APR-SEP	390	605	755	67%	905	1120	1120
Spokane R nr Post Falls 2	APR-JUL	415	1010	1420	57%	1830	2430	2510
	APR-SEP	500	1110	1520	59%	1930	2540	2570

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

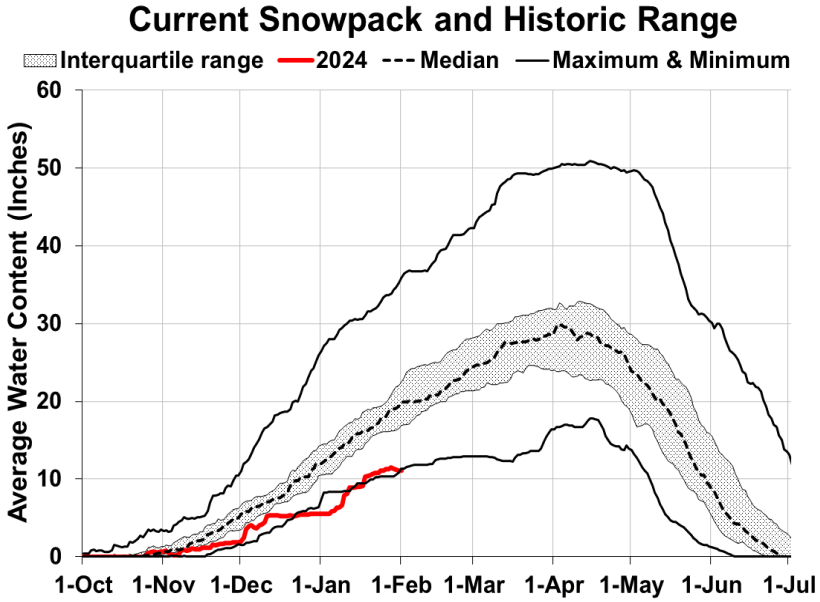
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Hungry Horse Lake	2843.9	2675.0	2626.0	3451.0
Flathead Lake		988.2	942.9	1791.0
Noxon Rapids Reservoir	321.3	307.9	316.4	335.0
Lake Pend Oreille	584.0	611.1	630.8	1561.3
Priest Lake	105.4	50.1	55.3	119.3
Lake Coeur d' Alene	100.3	49.0	106.7	238.5

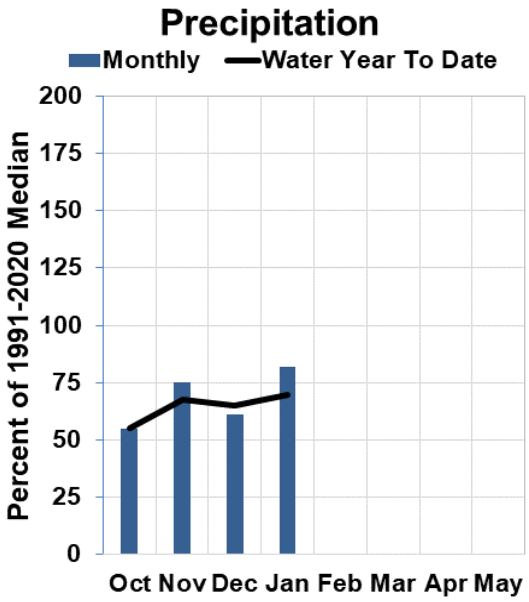
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Moyie River	1	53%	85%
Priest River	8	60%	90%
Rathdrum Creek	3	51%	102%
Coeur d' Alene River	5	52%	91%
St. Joe River	4	53%	90%
Pend Oreille Lake	5	59%	87%
Palouse River	2	67%	96%
Lower Kootenai	2	64%	81%
Pend Oreille-Kootenai	15	59%	88%
Coeur d' Alene-St. Joe Total	8	54%	92%

Clearwater River Basin

February 1, 2024





WATER SUPPLY OUTLOOK

El Niño and an arctic front produced unusual meteorological conditions throughout the Clearwater Basin last month. The arctic frontal passage produced significant snowfall and frigid temperatures in the middle of January, but this very cold and dry snow lacked the water content to significantly improve snowpack conditions. Snowfall in the Clearwater Basin is typically warmer and wetter than this frigid storm produced, and consequently, snowpack accumulation rates did not keep up with the climatology of this basin. After the cold front, El Niño ushered in warmer than normal temperatures and rain. During the last four days of January, up to an inch of snow water equivalent (SWE) was lost at nearly all SNOTEL sites in the basin from these warm temperatures and rain-on-snow events. This mix of precipitation types throughout January increased total water year precipitation but did little to improve snowpack. As of February 1, total water year precipitation is 68% of normal (Fig. 1) in contrast to the snowpack, which is 58% of normal (Fig. 3). January monthly precipitation was 79% of normal (Fig. 2). The Clearwater Basin is at a record low snowpack for February 1, a record last set in 2001.

Dworshak Reservoir is 64% full, which is 94% of normal on February 1. The 50% exceedance streamflow forecasts are ~60 to 80% of normal for April to July (Fig. 4). NOAA's Climate Prediction Center's 30-day outlook forecasts warmer and drier conditions for February. The long-term three-month outlooks predict similar conditions. The stage is set for the Clearwater Basin to potentially end the winter with the lowest snowpack on record. There is potential for conditions to improve, but the Clearwater Basin will need cold, frequent storms with significant snowfall during the remaining winter months to reach near normal snowpack conditions.

Clearwater River Basin Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Selway R nr Lowell	APR-JUL	1030	1340	1560	80%	1770	2080	1960
	APR-SEP	1090	1420	1630	80%	1850	2170	2050
Lochsa R nr Lowell	APR-JUL	620	840	995	70%	1150	1370	1430
	APR-SEP	660	890	1040	69%	1200	1420	1500
Dworshak Reservoir Inflow 2	APR-JUL	795	1220	1500	63%	1780	2200	2370
	APR-SEP	875	1300	1590	62%	1880	2300	2560
Clearwater R at Orofino	APR-JUL	2050	2760	3250	74%	3730	4450	4380
	APR-SEP	2190	2920	3420	75%	3910	4640	4570
Clearwater R at Spalding 2	APR-JUL	2780	4030	4880	72%	5730	6980	6820
	APR-SEP	3000	4270	5140	71%	6010	7280	7290

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

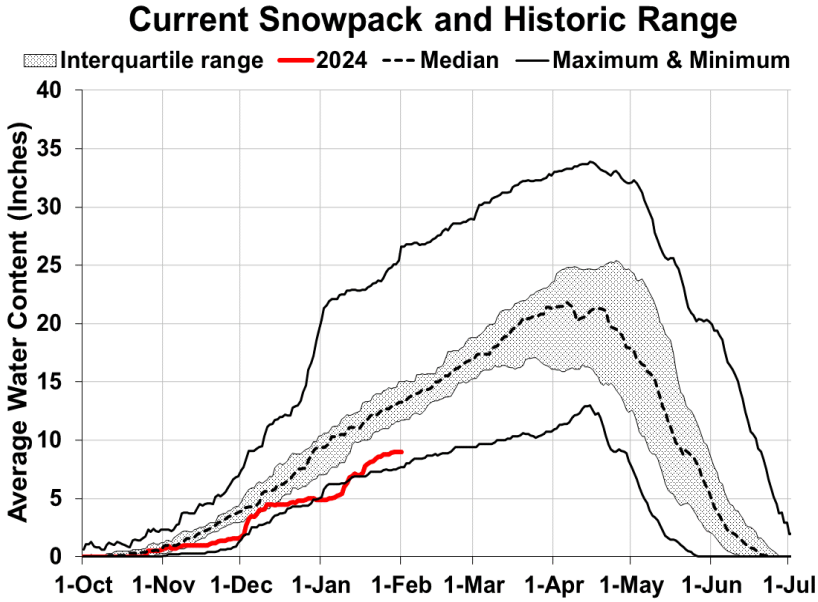
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Dworshak Reservoir	2208.7	2217.0	2339.0	3468.0

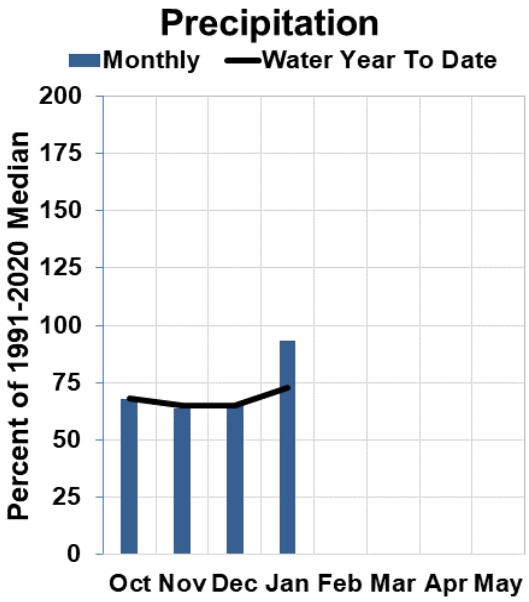
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
NF Clearwater River	8	53%	91%
Lochsa River	3	58%	88%
Selway River	4	66%	86%
SF Clearwater River	1	67%	93%
Clearwater Basin Total	17	58%	90%

Salmon River Basin

February 1, 2024





WATER SUPPLY OUTLOOK

The Salmon Basin received near normal precipitation (93%) during January (Fig. 2) with total water year precipitation reaching 72% of normal on February 1 (Fig. 1). However, snowpack conditions do not reflect the amount of precipitation received in January. The Salmon Basin had a record low snowpack in the first half of January until a frigid arctic front pushed into the region. The arctic frontal passage helped bring snowpack in the Salmon Basin out of record low conditions, however, most of the precipitation fell in the western portion of the basin and did little to improve the basin as a whole. The eastern zone experienced a rain-shadow effect from western and southwestern mountains in this region. SWE totals nearly doubled to tripled in the western mountains compared to the eastern side of the basin. While snowpack conditions slightly improved from the frigid storms, major snow producing events ceased around January 20 as El Niño brought warmer than normal temperatures into the region after the arctic front passed. After January 20, little precipitation occurred, and the majority of precipitation came in the form of rain, keeping snowpack near record lows in the Salmon Basin. Snowpack is 67% of normal on February 1 (Fig. 3).

There are no reservoirs in the Salmon Basin. The 50% exceedance streamflow forecasts are ~65 to 75% of normal for April through July (Fig. 4). NOAA's Climate Prediction Center's 30-day outlook forecasts warmer and drier conditions for February. El Niño conditions are expected to persist throughout the winter season. Conditions may improve, but the Salmon Basin has a long road to reach near normal conditions. Well above normal precipitation (90th percentile) is needed to reach median peak conditions.

Salmon River Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Salmon R at Salmon	APR-JUL	240	440	570	71%	705	900	800
	APR-SEP	295	515	665	72%	810	1030	920
Lemhi R nr Lemhi	APR-JUL	1.47	27	44	65%	61	87	68
	APR-SEP	6.7	36	56	68%	76	105	82
MF Salmon R at MF Lodge	APR-JUL	275	450	570	74%	690	865	775
	APR-SEP	320	510	640	75%	765	955	850
SF Salmon R nr Krassel Ranger Station	APR-JUL	115	176	215	74%	260	320	290
	APR-SEP	127	190	235	76%	275	340	310
Johnson Ck at Yellow Pine	APR-JUL	78	125	157	75%	188	235	210
	APR-SEP	85	133	166	75%	199	250	220
Salmon R at White Bird	APR-JUL	2260	3320	4030	68%	4750	5800	5940
	APR-SEP	2580	3700	4470	68%	5230	6360	6600

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

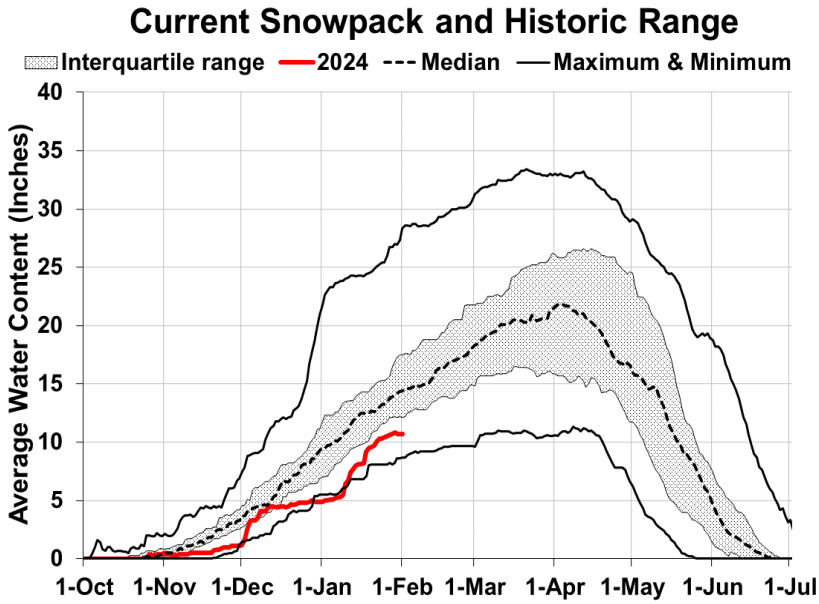
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

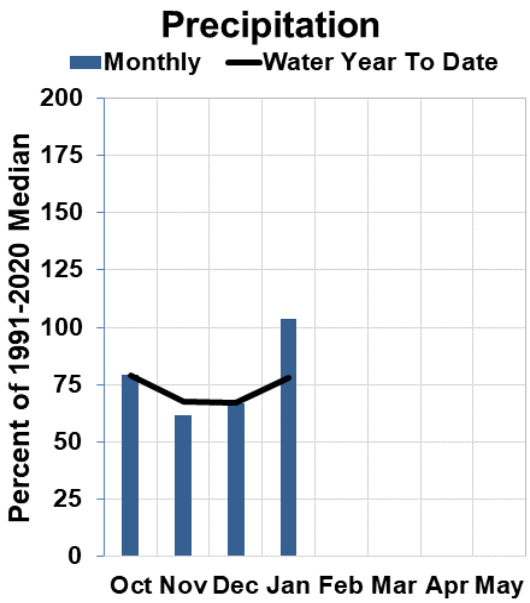
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Salmon River ab Salmon	6	70%	108%
Lemhi River	3	69%	121%
MF Salmon River	3	66%	100%
SF Salmon River	3	65%	97%
Little Salmon River	4	71%	104%
Lower-Middle Salmon	4	64%	98%
Salmon Basin Total	19	67%	102%

West Central Basins

February 1, 2024





WATER SUPPLY OUTLOOK

Precipitation in January was 100 to 115% of normal across the West Central basins (Fig. 1). Total water year precipitation is 77 to 82% of normal (Fig. 2). The West Central basins received near normal snowfall in January. SNOTEL SWE accumulation in January ranged from ~70 to 200% of normal, with a majority of the stations hovering around the monthly median. Unfortunately, this was not enough snowfall to make up for the dry early winter conditions. Snowpack in these basins is still below normal, ranging from ~60 to 80%. While high elevation sites in these basins did not experience melt during the warm temperature period near the end of January, SWE losses occurred at the three SNOTEL sites below 5,000 ft.

Reservoir storage in the Boise system (Anderson Ranch, Arrowrock and Lucky Peak combined) is 118% of normal on February 1. Storage in the Payette system is 105% of normal. Storage in the Weiser is 106% of normal. The 50% exceedance streamflow forecasts for the April through July period in the Boise Basin are 73 to 85% of normal, the Payette is 73 to 81% of normal, and the Weiser is 75% of normal. Soil moisture is near normal throughout the basins. NOAA's 30-Day Outlook predicts increased chances for warmer temperatures and below normal precipitation during February.

West Central Basins Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
SF Boise R at Anderson Ranch Dam 2	APR-JUL	108	235	320	76%	405	530	420
	APR-SEP	131	260	350	78%	440	570	450
Boise R nr Twin Springs	APR-JUL	260	395	485	81%	575	710	600
	APR-SEP	295	435	530	82%	620	760	645
Mores Ck nr Arrowrock Dam	APR-JUL	18.8	54	78	81%	102	137	96
	APR-SEP	21	57	81	81%	105	141	100
Boise R nr Boise 2	APR-JUL	455	755	955	85%	1160	1460	1130
	APR-SEP	525	835	1040	85%	1250	1560	1220
Lake Fork Payette R nr McCall	APR-JUL	42	56	66	81%	75	89	81
	APR-SEP	43	58	67	81%	77	92	83
NF Payette R at Cascade 2	APR-JUL	185	290	360	75%	430	535	480
	APR-SEP	182	290	365	74%	440	550	490
NF Payette R nr Banks 2	APR-JUL	198	345	445	75%	540	690	595
	APR-SEP	199	350	450	74%	555	705	610
SF Payette R at Lowman	APR-JUL	187	270	325	79%	380	465	410
	APR-SEP	220	310	370	81%	430	520	455
Deadwood Reservoir Inflow 2	APR-JUL	47	72	90	73%	107	133	124
	APR-SEP	52	80	98	72%	117	145	136
Payette R nr Horseshoe Bend 2	APR-JUL	525	875	1110	78%	1350	1700	1430
	APR-SEP	570	940	1190	78%	1440	1810	1530
Weiser R nr Weiser	FEB-JUL	200	320	420	72%	530	715	585
	APR-JUL	115	190	255	75%	325	445	340
	APR-SEP	131	210	275	74%	345	470	370

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

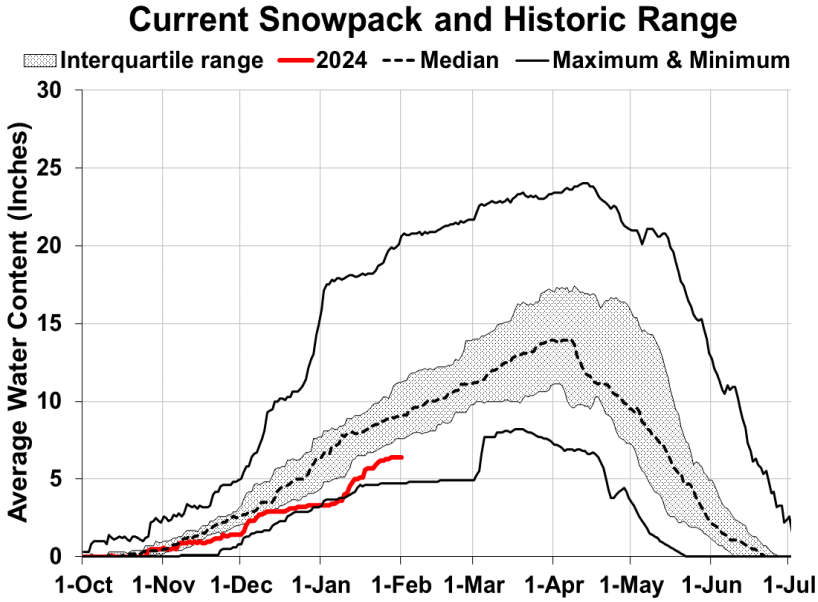
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	388.0	342.9	270.2	450.2
Arrowrock Reservoir	198.3	164.2	206.9	272.2
Lucky Peak Reservoir	86.7	88.7	92.5	293.2
Sub-Basin Total	**673.0**	**595.8**	**569.6**	**1015.6**
Deadwood Reservoir	97.5	77.9	91.6	161.9
Cascade Reservoir	476.3	436.6	454.4	693.2
Sub-Basin Total	**573.8**	**514.6**	**546.0**	**855.1**
Lake Lowell	116.6	81.0	98.7	165.2
Mann Creek Reservoir	2.8	1.2	2.6	11.1

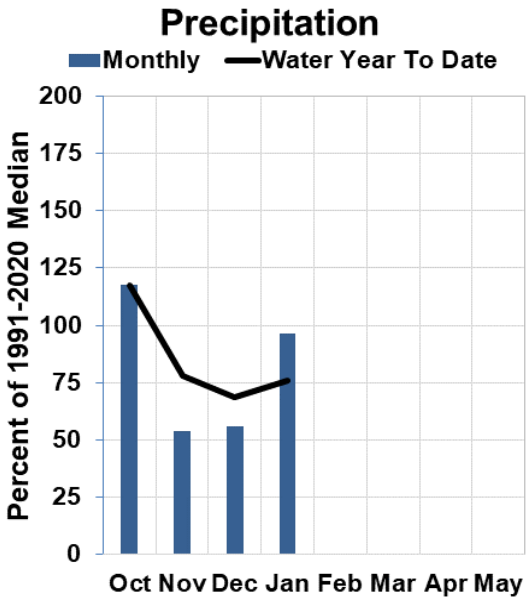
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
SF Boise River	9	80%	119%
MF & NF Boise Rivers	6	74%	105%
Mores Creek	5	82%	102%
Canyon Creek	4	94%	130%
Boise Basin Total	18	81%	110%
NF Payette River	9	65%	99%
SF Payette River	4	69%	102%
Payette Basin Total	19	69%	101%
Mann Creek	1	75%	131%
Weiser Basin Total	8	59%	109%

Wood & Lost River Basin

February 1, 2024





WATER SUPPLY OUTLOOK

Precipitation during January in the Wood and Lost basins was ~90 to 105% of normal (Fig. 1) even with well above normal precipitation for most of the basins during the first half of the month. Total water year precipitation improved last month but is still below normal and ranges from ~70 to 80% of normal (Fig. 2). The Wood and Lost basins continue to experience well below normal snowpack conditions, ranging between ~55 to 70% of normal (Fig. 3) on February 1. The significant snowfall in the middle of January lifted nearly all SNOTEL stations in the Wood and Lost basins from near to record low snowpack conditions, but the percentiles compared to the period of record remains low (5th-20th percentile). Record high temperatures in the latter half of January and rain-on-snow events were common across Idaho leading to SWE loss at lower elevation sites, although SWE loss was not observed at any SNOTEL sites in the Wood and Lost basins during February.

February 1 reservoir storage remains above the 30-year normal at Magic Reservoir with 266% of normal storage (69% full). Little Wood Reservoir is 125% of normal (70% full). Mackay Reservoir is still below normal at 59% of normal (37% full). Streamflow forecasts for the Wood and Lost basins are below normal, ranging from ~60 to 90% of normal for the 50% exceedance forecast, except for Camas Creek at Camas at 34%. NOAA's Climate Prediction Center's 30-Day Outlook suggests increased chances for above normal temperature and equal chances for above or below normal precipitation during February.

Wood and Lost Basins Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Camas Ck at Camas	APR-JUL	0.02	2.2	5.8	34%	11.1	22	17.3
Little Lost R bl Wet Ck nr Howe	APR-JUL	9	15.6	20	80%	24	31	25
	APR-SEP	9.8	18.4	24	83%	30	39	29
Big Lost R at Howell Ranch	APR-JUL	43	88	118	81%	148	193	145
	APR-SEP	49	99	132	83%	165	215	159
Big Lost R bl Mackay Reservoir	APR-JUL	23	64	92	88%	120	161	104
	APR-SEP	38	83	113	89%	143	188	127
Little Wood R ab High Five Ck	MAR-JUL	11.6	25	37	64%	51	77	58
	MAR-SEP	12.7	27	40	65%	55	82	62
Little Wood R nr Carey 2	MAR-JUL	14.1	30	45	74%	63	94	61
	MAR-SEP	15.3	33	48	74%	67	100	65
Big Wood R at Hailey	APR-JUL	24	104	158	75%	210	290	210
	APR-SEP	32	118	177	77%	235	320	230
Big Wood R ab Magic Reservoir	APR-JUL	14.6	49	84	60%	129	210	139
	APR-SEP	16.9	54	91	62%	137	225	146
Camas Ck nr Blaine	MAR-JUL	6.9	25	44	83%	68	113	53
	MAR-SEP	6.9	25	44	83%	68	113	53
Big Wood R bl Magic Dam 2	APR-JUL	26	76	123	72%	183	290	172
	APR-SEP	30	82	132	73%	193	305	182

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

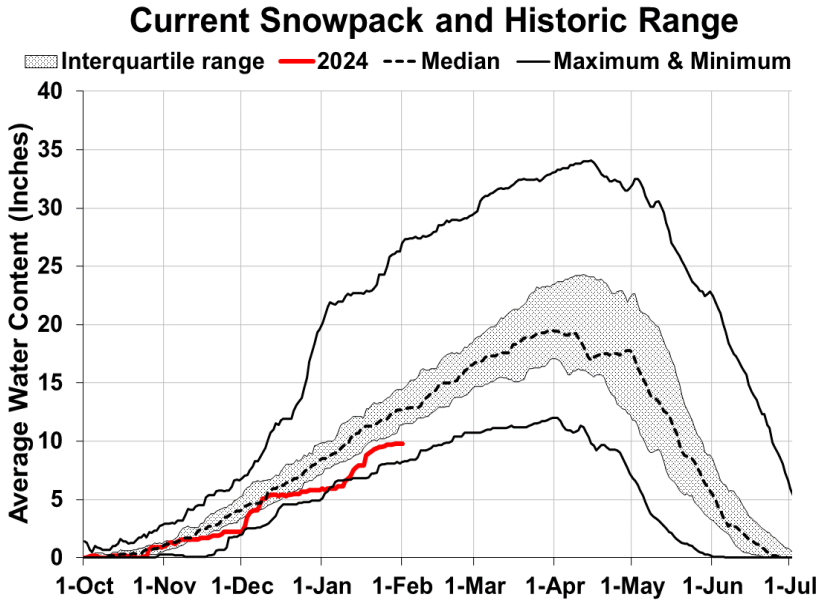
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Mackay Reservoir	16.6	25.3	28.2	44.4
Little Wood Reservoir	21.1	13.7	16.9	30.0
Magic Reservoir	132.8	24.6	50.0	191.5

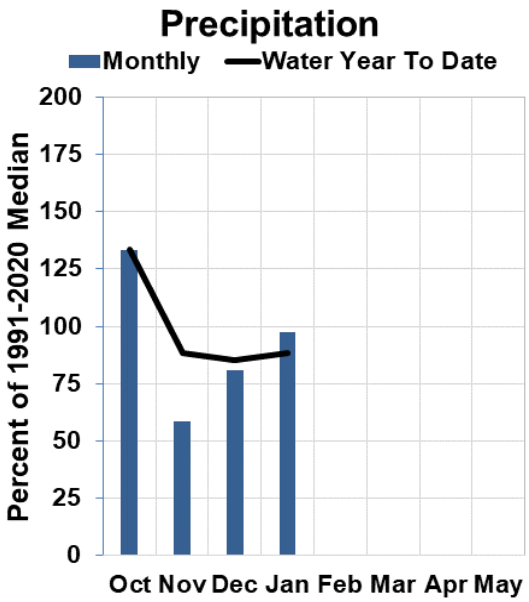
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Camas-Beaver Creeks	4	46%	149%
Birch-Medicine Lodge Creeks	2	74%	123%
Little Lost River	3	70%	133%
Big Lost River ab Mackay	5	64%	136%
Big Lost Basin Total	7	64%	142%
Fish Creek	3	52%	149%
Little Wood ab Resv	5	69%	133%
Big Wood River ab Hailey	8	69%	140%
Camas Creek	4	76%	129%
Birch-Medicine Lodge-Camas-Beaver Total	6	56%	140%
Little Wood Basin Total	8	63%	139%
Big Wood Basin Total	12	71%	136%

Upper Snake River Basin

February 1, 2024





WATER SUPPLY OUTLOOK

January precipitation in the Upper Snake echoed conditions across the state; stations in the south received above normal to normal precipitation and those in the north received normal to below normal precipitation. While the Willow-Blackfoot-Portneuf Basin received 125% of normal January precipitation, Snake River above Heise Basin received 97%, and Henrys Fork-Teton received even less, with only 87% of normal monthly precipitation (Fig. 1). Total water year precipitation in the Upper Snake basins on February 1: Henrys Fork-Teton and Snake River above Heise are ~85% of normal, and the Willow-Blackfoot-Portneuf is 108% of normal (Fig. 2). Snowpack improved during January but remains well below normal at 73% in the Henrys Fork-Teton and 74% in the Snake River above Heise. The Willow-Blackfoot-Portneuf snowpack improved from 80% to 99% of normal since January 1 (Fig. 3). Drought conditions have worsened in the Upper Snake with a large area now considered abnormally dry and a return of some moderate to severate drought designations in the Snake River headwaters. NOAA's 30-day Outlook favors above normal temperatures during February with no clear signal for precipitation patterns. However, in the first third of February, NOAA's Northwest River Forecast Center forecasts normal to well above normal precipitation across these basins. Snake River above Heise is predicted to receive less precipitation than the rest of the region.

The Upper Snake reservoir system above Milner Dam is currently 114% of normal (76% full), and the Jackson-Palisades system is at 119% of normal (79% full). The 50% exceedance streamflow forecasts in the region range from ~65 to 90% of median runoff for the April to July period. The forecast at Heise is 75% of normal at the 50% exceedance level.

Upper Snake River Basin Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Henrys Fk nr Ashton 2	APR-JUL	260	325	365	77%	405	470	475
	APR-SEP	400	470	515	82%	560	630	630
Falls R nr Ashton 2	APR-JUL	215	260	295	75%	330	375	395
	APR-SEP	255	315	355	75%	395	455	475
Teton R nr Driggs	APR-JUL	75	105	126	86%	146	177	146
	APR-SEP	91	129	155	87%	181	220	178
Teton R nr St Anthony	APR-JUL	200	265	305	86%	350	415	355
	APR-SEP	235	310	360	85%	410	485	425
Henrys Fk nr Rexburg 2	APR-JUL	710	895	1020	84%	1150	1330	1210
	APR-SEP	930	1160	1320	84%	1470	1700	1580
Snake R at Flagg Ranch	APR-JUL	260	335	385	83%	435	510	465
	APR-SEP	280	360	415	82%	470	550	505
Snake R nr Moran 2	APR-JUL	405	515	590	81%	665	775	730
	APR-SEP	450	570	655	81%	740	860	810
Pacific Ck at Moran	APR-JUL	57	81	97	63%	113	137	154
	APR-SEP	61	86	103	64%	120	145	160
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	107	154	185	65%	215	265	285
	APR-SEP	111	164	200	65%	235	290	310
Snake R ab Reservoir nr Alpine 2	APR-JUL	850	1210	1460	68%	1710	2070	2140
	APR-SEP	1020	1430	1700	70%	1970	2380	2430
Greys R ab Reservoir nr Alpine	APR-JUL	196	245	280	89%	315	365	315
	APR-SEP	230	285	325	89%	365	420	365
Salt R ab Reservoir nr Etna	APR-JUL	162	225	270	89%	315	380	305
	APR-SEP	210	285	335	88%	385	460	380
Snake R nr Irwin 2	APR-JUL	1450	1960	2300	78%	2640	3150	2930
	APR-SEP	1740	2310	2700	79%	3090	3660	3420
Snake R nr Heise 2	APR-JUL	1510	2020	2360	75%	2710	3210	3130
	APR-SEP	1840	2420	2810	77%	3200	3780	3660
Willow Ck nr Ririe 2	MAR-JUL	18.8	35	50	116%	66	95	43
	MAR-SEP	18	35	49	104%	66	96	47.237
Portneuf R at Topaz	MAR-JUL	49	60	69	113%	78	92	61
	MAR-SEP	60	74	84	112%	95	111	75
Snake R at Neeley 2	APR-JUL	220	1050	1620	68%	2190	3020	2390
	APR-SEP	92	990	1600	68%	2210	3110	2360

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

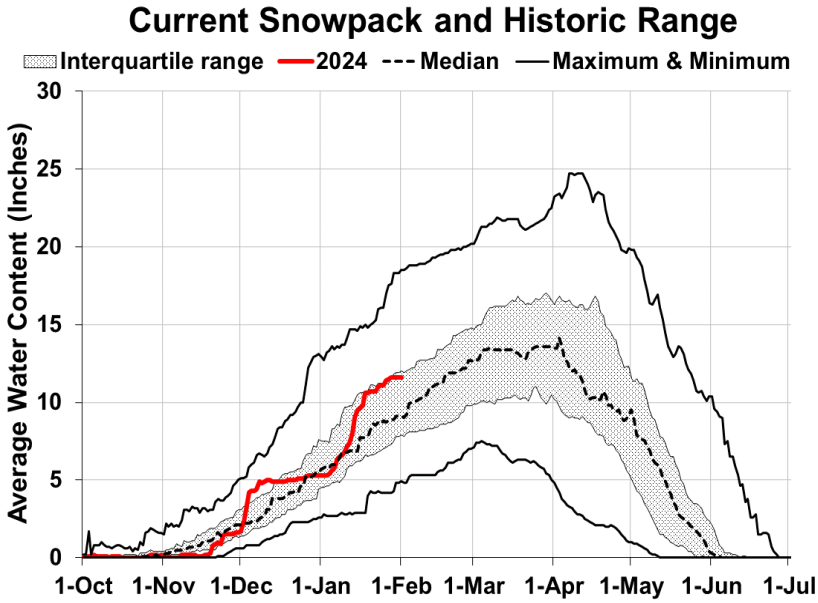
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Jackson Lake	598.1	178.0	620.4	847.0
Palisades Reservoir	1182.8	513.0	874.5	1400.0
Sub-Basin Total	**1780.8**	**691.0**	**1494.9**	**2247.0**
Henrys Lake	82.1	80.0	84.1	90.4
Island Park Reservoir	121.9	104.5	105.0	135.2
Grassy Lake	12.8	11.2	12.7	15.2
Sub-Basin Total	**216.8**	**195.8**	**201.8**	**240.8**
Ririe Reservoir	47.7	45.3	41.8	80.5
Blackfoot Reservoir	271.7	166.6	180.6	337.0
American Falls Reservoir	1177.0	875.8	1142.0	1672.6
Basin-Wide Total	**3494.1**	**1974.5**	**3061.1**	**4577.9**

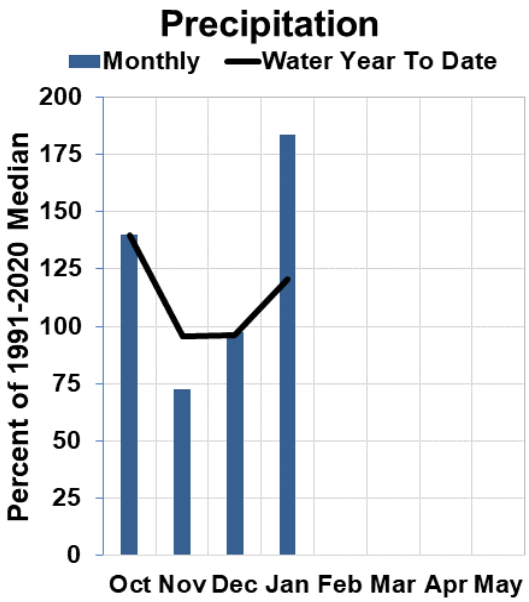
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Henrys Fork-Falls River	9	67%	116%
Teton River	9	80%	112%
Henrys Fork-Teton	16	73%	114%
Snake River ab Jackson Lake	9	68%	103%
Pacific Creek	3	63%	97%
Buffalo Fork	4	62%	97%
Gros Ventre River	4	64%	97%
Hoback River	5	69%	100%
Greys River	5	86%	106%
Salt River	6	98%	124%
Snake ab Palisades Resv	30	72%	104%
Willow Creek	5	86%	106%
Blackfoot River	5	95%	137%
Portneuf River	6	109%	148%
Willow-Blackfoot-Portneuf	15	99%	143%
Snake River ab American Falls	49	79%	116%

Southern Snake River Basins

February 1, 2024





WATER SUPPLY OUTLOOK

January precipitation was 165 to 192% of normal across the Southern Snake River basins (Fig. 1). Total water year precipitation is now 113 to 124% of normal (Fig. 2). The Southern Snake River basins received a well above average boost to the snowpack in January. SWE accumulation in January ranged from 121 to 236% of normal. With the warm temperatures near the end of the month, we observed rain-on-snow events through the region. We did not observe melt at any of the SNOTEL sites, however, melt occurred at many of the lower elevation SNOLITE stations. However, the snowpack in these basins remained above normal (119 to 132%) thanks to above normal SWE accumulation during January (Fig. 3).

Reservoir storage in Lake Owyhee is 166% of normal (60% full), Wild Horse Reservoir storage is 189% of normal (81% full), Salmon Falls Reservoir storage is 119% of normal (22% full), and Oakley Reservoir storage is 133% of normal (33% full). The 50% exceedance streamflow forecasts in the region range from 122 to 161% of median runoff for the primary forecast period. Soil moisture is above normal throughout the area, this is a positive indicator for higher runoff efficiency during melt season. NOAA's 30-Day Outlook predicts increased chances for warmer temperatures and normal precipitation during February.

Alert: snowpack measurements at the Reynolds Creek SNOTEL station have become heavily wind-affected. SWE and snow depth observations at this station are higher than what is representative of the regional snowpack due to heavy snow drifting. If you have any questions, please reach out to the Idaho Snow Survey.

Southern Snake River Basins Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Goose Ck ab Trapper Ck nr Oakley	MAR-JUL	11.4	17.9	23	136%	29	39	16.9
	MAR-SEP	11.8	18.5	24	139%	30	41	17.3
Trapper Ck nr Oakley	MAR-JUL	4.4	5.3	6	122%	6.7	7.9	4.9
	MAR-SEP	5.4	6.4	7.1	118%	7.9	9	6
Oakley Reservoir Inflow	MAR-JUL	15.9	23	29	132%	36	46	22
	MAR-SEP	17.5	25	31	129%	38	49	24
Salmon Falls Ck nr San Jacinto	MAR-JUL	50	71	87	136%	105	135	64
	MAR-SEP	53	74	91	138%	109	139	66
Bruneau R nr Hot Spring	MAR-JUL	144	198	240	139%	285	360	173
	MAR-SEP	150	205	250	140%	295	370	179
Reynolds Ck at Tollgate	MAR-JUL	5.2	7.3	8.9	122%	10.7	13.7	7.3
	MAR-SEP	5.2	7.4	9	122%	10.8	13.8	7.4
Owyhee R nr Gold Ck 2	MAR-JUL	15.1	25	33	150%	42	58	22
	APR-JUL	8.1	17	25	145%	34	51	17.2
Owyhee R nr Rome	FEB-JUL	285	445	570	152%	715	950	375
	FEB-SEP	300	460	585	150%	730	970	390
	APR-JUL	111	230	330	161%	455	670	205
Owyhee R bl Owyhee Dam 2	FEB-JUL	330	490	620	148%	760	995	420
	FEB-SEP	355	520	650	144%	790	1030	450
	APR-JUL	127	245	345	147%	465	670	235

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

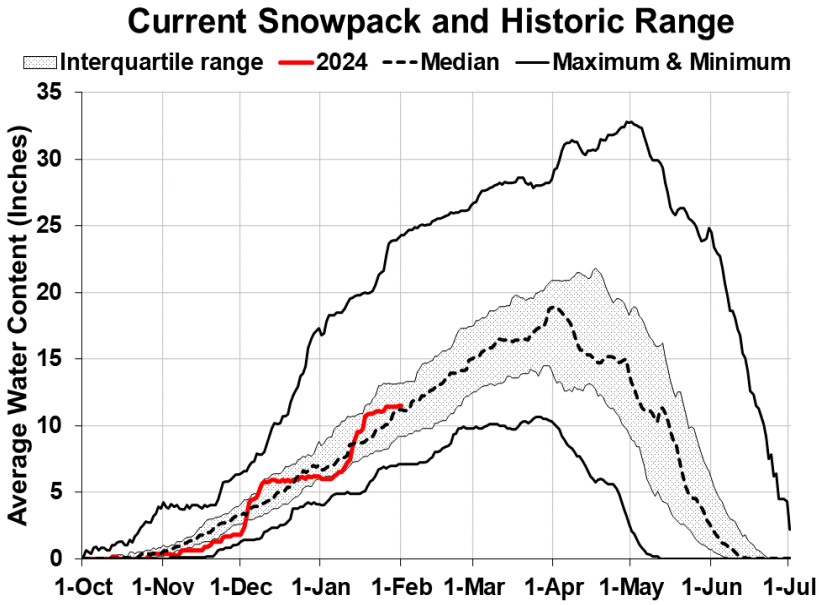
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Oakley Reservoir	25.3	12.2	19.1	75.6
Salmon Falls Reservoir	41.0	15.3	34.5	182.6
Wild Horse Reservoir	57.7	29.1	30.5	71.5
Lake Owyhee	430.6	119.4	258.8	715.0
Brownlee Reservoir	1225.7	1088.2	1230.0	1420.0

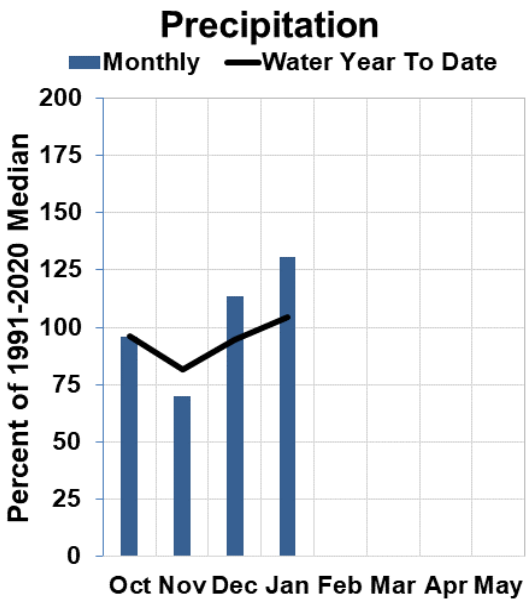
Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Raft River	3	122%	133%
Goose-Trapper Creeks	2	124%	125%
Salmon Falls Creek	6	119%	125%
Bruneau River	8	125%	128%
Reynolds Creek	6	122%	99%
Upper Owyhee	13	139%	127%
Owyhee Basin Total	20	132%	129%

Bear River Basin

February 1, 2024





WATER SUPPLY OUTLOOK

Water year total precipitation is slightly above normal on February 1 for Bear River Basin. Water year total precipitation has remained near normal all winter and thanks to early January storms, is 103% of normal on February 1 (Fig. 2). Basin-wide monthly precipitation during January was 131% of normal (Fig. 1) with observed precipitation at SNOTEL sites ranging from 100 to 233% of normal. The snowpack is currently 105% of normal with ~65 days left in the normal snow accumulation season (Fig. 3). NOAA's 30-day Outlook leans toward above normal temperatures. It also favors equal chances of above or below normal precipitation in the Bear River Basin north of the Idaho-Utah border and above normal precipitation south of the border.

Reservoir storage for Bear Lake is well above normal at 182% (65% full) on February 1. The 50% exceedance streamflow forecasts in this basin range from 80% to 150% for the April to July period.

Bear River Basin Streamflow Forecasts - February 1, 2024

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Bear R nr UT-WY State Line	APR-JUL	54	77	93	92%	109	132	101
	APR-SEP	65	90	107	94%	124	149	114
Bear R ab Resv nr Woodruff	APR-JUL	25	49	81	88%	113	161	92
	APR-SEP	26	48	83	84%	118	169	99
Big Ck nr Randolph	APR-JUL	0.9	3.2	4.8	150%	6.3	8.6	3.2
Smiths Fk nr Border	APR-JUL	45	63	75	87%	87	105	86
	APR-SEP	54	74	88	88%	102	122	100
Bear R bl Stewart Dam 2	FEB-JUL	25	67	107	80%	156	245	133
	FEB-SEP	29	76	121	83%	176	275	145
	MAR-JUL	21	60	98	78%	146	235	126

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

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

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

Reservoir Storage (KAF): End of January

Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Bear Lake	849.6	396.4	467.9	1302.0
Montpelier Reservoir		.7	2.1	4.0

Watershed Snowpack Analysis: February 1, 2024

Basin Name	# of Sites	% of Median 2024	2023
Smiths-Thomas Forks	5	92%	125%
Bear Lake	7	109%	154%
Montpelier Creek	2	93%	141%
Mink Creek	0		
Cub River	1	104%	140%
Bear River Total	23	105%	149%
Malad River	1	137%	169%

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. 2024).**

Panhandle Region

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

Moyie R at Eastport – no corrections

Boundary Ck nr Porthill – no corrections

Clark Fork R bl Cabinet Gorge (2)
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Res storage change
Whitehorse Rapid gage used create longer term record

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

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

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

NF Coeur d' Alene R at Enaville - no corrections

St. Joe R at Calder- no corrections

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

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

Clearwater River Basin

Selway R nr Lowell - no corrections

Lochsa R nr Lowell - no corrections

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

Clearwater R at Orofino - no corrections

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

Salmon River Basin

Salmon R at Salmon - no corrections

Lemhi R nr Lemhi – no corrections

MF Salmon R at MF Lodge – no corrections
SF Salmon gage used to create longer term record

SF Salmon R nr Krassel Ranger Station – no corrections

Johnson Creek at Yellow pine – no corrections Salmon R at White Bird - no corrections

West Central Basins

Boise R nr Twin Springs - no corrections

SF Boise R at Anderson Ranch Dam (2)
+ Anderson Ranch Res storage change Mores Ck nr Arrowrock Dam – no corrections

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

SF Payette R at Lowman - no corrections

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

Lake Fork Payette R nr McCall – no corrections

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

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

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

Weiser R nr Weiser - no corrections

Wood and Lost Basins

Little Lost R bl Wet Ck nr Howe - no corrections

Big Lost R at Howell Ranch - no corrections

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

Little Wood R ab High Five Ck – no corrections

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

Big Wood R at Hailey - no corrections

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

Camas Ck nr Blaine – no corrections

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

Upper Snake River Basin

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

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

Teton R nr Driggs - no corrections

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

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

Southside Snake River Basins

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

Bear River Basin

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

Reservoir Capacity Definitions (Units in 1,000 Acre-Feet, KAF)

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

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

Interpreting Water Supply Forecasts

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

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

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

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

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

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

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

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

30-Year Median. The 30-year median streamflow for each forecast period is provided for comparison. The median is based on data from 1991-2020. The % MED column compares the 50% chance of exceedance forecast to the 30-year median streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year median streamflow.

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

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

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

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

<u>Forecast use example:</u>

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

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

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 198 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 72 KAF.

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

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

Upper Snake River Basin Streamflow Forecasts - June 1, 2015

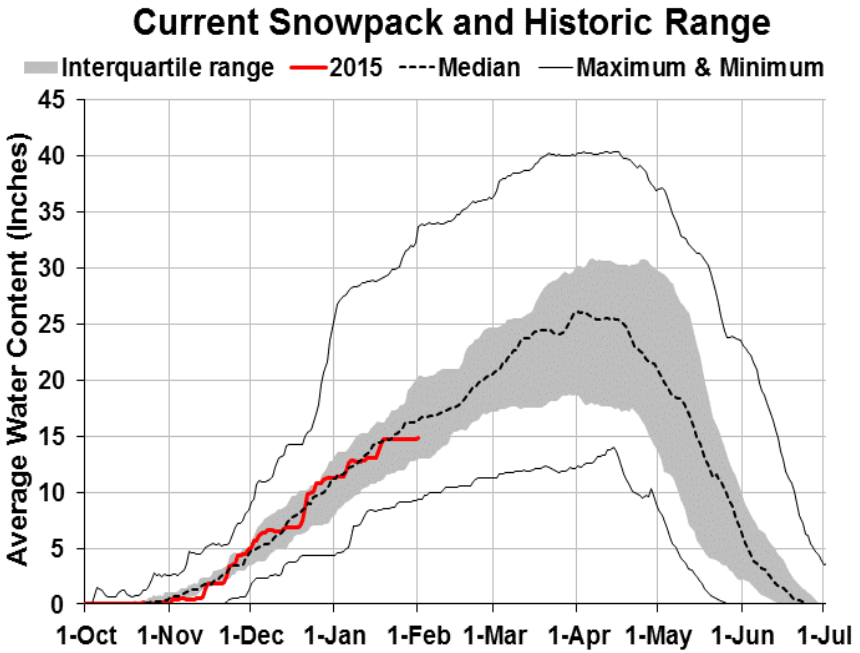
Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <---Drier----------Projected Volume----------Wetter---> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton	JUN-JUL	72	106	129	56	152	186	230
	JUN-SEP	198	245	280	68	315	360	410

Interpreting Snowpack Plots

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

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

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



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This publication is dedicated to the people, agencies and organizations utilizing this data, information and forecasts for short and long term water management, planning, preparation, recreation and otherwise, for the enhancement of the economy and enrichment of livelihoods.