



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

February 1, 2020



New Dutchman #3 snow course in the Upper Deschutes basin during the February 1st snow survey (Photo: Kurt Moffit, NRCS Redmond)

Statewide snowpack increased significantly in the month of January thanks to a series of moisture-rich storms. Initially, temperatures were seasonably cold, but toward the end of the month temperatures warmed to well above average, leading to rain at high elevations and increasingly dense and wet snowpacks. At New Dutchman #3 snow course, at an elevation of 6320 feet, runnels from rain and melting are visible on the snow surface.

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General Outlook

February 1st, 2020

SUMMARY

A series of storms and cooler temperatures during the month of January brought a substantial recovery in snowpack and improved the water supply outlook for February 1st. Despite above average monthly precipitation in January, statewide SNOTEL water year precipitation continues to lag below normal due to the dry warm periods during November and early December.

Streamflows across Oregon varied in January, with above average streamflow on the west side of the Cascades and below average flow in the majority of streams in central and eastern Oregon. Reservoirs are mostly storing below average amounts west of the Cascades and near average to above average amounts east of the Cascades on February 1st, however there is a large range of values due to required operations, facility maintenance, and/or other storage activities.

The National Oceanic Atmospheric Administration Climate Prediction Center is forecasting equal chances of normal temperatures and precipitation for February, March, and April: <http://www.cpc.ncep.noaa.gov/>. Future weather over the next 2 months will ultimately determine the 2020 water supply outlook, especially the snow accumulation trend and how temperatures impact the snowpack.

SNOWPACK

Statewide snow water equivalent increased from 45% of normal on January 1st to 93% of normal on February 1st through a series of moisture-laden storms that characterized the month of January. Storms during the first half of the month were accompanied by cold temperatures and brought snow and ice to valleys and lowlands. Many low elevation snow measuring sites recorded above average snow during this time. Toward the end of the month, however, temperatures warmed considerably. Low elevation sites lost most of their snow, and higher elevation snowpacks became wetter and more dense as they warmed up.

February 1st basin snowpack values range from 85% of normal in the Klamath Basin to 126% of normal in the Owyhee Basin. With peak snowpack generally occurring between March 15th and April 1st, there are still approximately two months left in the snow accumulation season. This will be a critical time in determining the overall water supply outlook for this spring and summer.

PRECIPITATION

All Oregon basins recorded above average precipitation for the month of January, ranging from 145% in Lake County and Goose Lake Basins to 164% in the Grande Ronde, Powder, Burnt, and Imnaha Basins, which significantly bolstered total water year precipitation.

On February 1st, statewide water year precipitation had increased to 80% of normal, a large increase from 51% of normal on January 1st. Basin water year precipitation values range from 74% of average in the Klamath Basin to 92% of average in the Owyhee Basin.

RESERVOIRS

Reservoir storage amounts across Oregon are varied as of February 1st, with some below average and some above average. Lowest storage amounts are in the Umatilla, Walla Walla, and Willow Basins at 63% of average. The Owyhee and Malheur reservoirs have the highest amounts of storage in the state, where storage is 144% of average, collectively.

STREAMFLOW

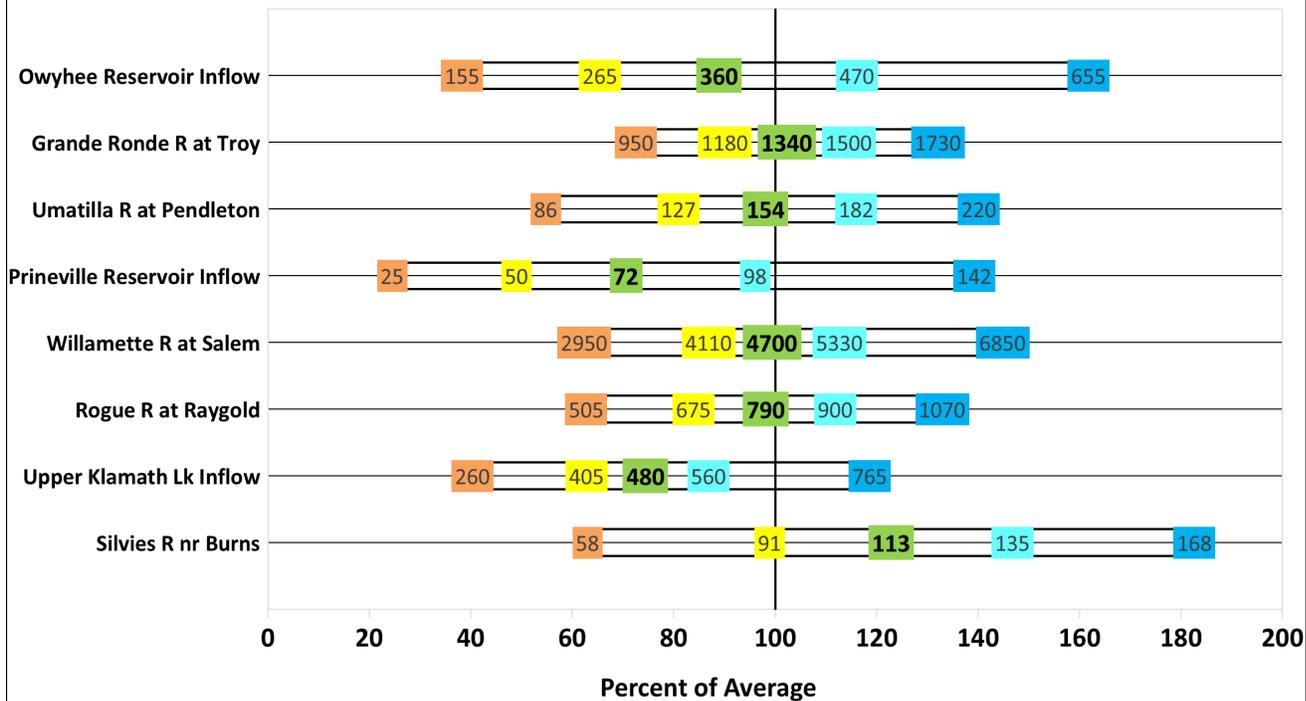
January streamflows in Oregon varied by region but were generally higher than December streamflows. Most streams west of the Cascades experienced above average to well above average flow, while the majority of streams in central and eastern Oregon remained below average. A handful of streams in northeast and southeast Oregon had near average or slightly above average flows.

Streamflow forecasts have increased across the board since January 1st, with many expected to reach near average flows. Current forecasts call for flows ranging from 55% of average to 137% of average, variable by basin and location. The lowest forecasted streamflows are currently in the Upper Deschutes basin, with forecasted flows ranging from 55% to 91%. The highest are in the Harney basin and in the Lake County and Goose Lake basins, where forecasted flows are between 96% and 137% of average. West of the Cascades in the Willamette and Rogue valleys, most forecasts call for close to average flows. The next two months will provide an opportunity to continue building the snowpack, and the timing of peak flows in the spring will depend on temperature and weather during that time.

To accompany the forecast summary graphic on the following page, here are some helpful reminders about interpreting streamflow forecasts published in this document. For each forecast point, five possible streamflow volumes are predicted. Where the observed streamflow occurs within this spectrum depends on the range of future weather conditions. If water users wish to plan conservatively, they may lean toward using the 70% chance of exceedance forecast, or the drier forecast (which may be below average depending on the region). Conversely, if a water user believes future conditions will provide more water to the system, they could choose to use the 30% chance of exceedance forecast (the wetter forecast). These arrays of forecasts are shown in the chart on the following page and explained in more detail at the end of this report.

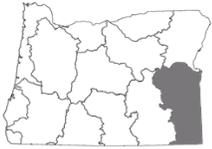
Summary of Streamflow Forecasts across Oregon

April through September Forecast Volumes at a Selection of Streamflow Points (Volumes listed in KAF)



Legend: ←-----Drier----- Future Conditions -----Wetter-----→				
90% Exceedance Forecast (KAF)	70% Exceedance Forecast (KAF)	50% Exceedance Forecast (KAF)	30% Exceedance Forecast (KAF)	10% Exceedance Forecast (KAF)
There is a 90% chance that flows will exceed this volume.	There is a 70% chance that flows will exceed this volume.	There is a 50% chance that flows will exceed this volume.	There is a 30% chance that flows will exceed this volume.	There is a 10% chance that flows will exceed this volume.

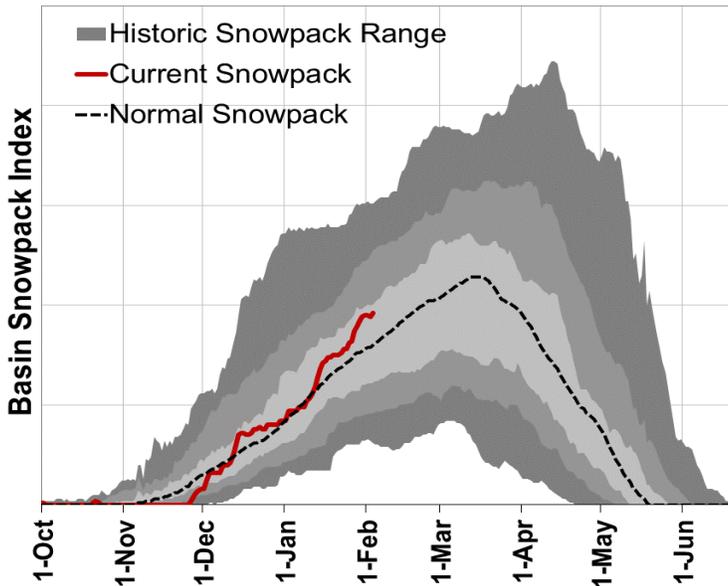
All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.



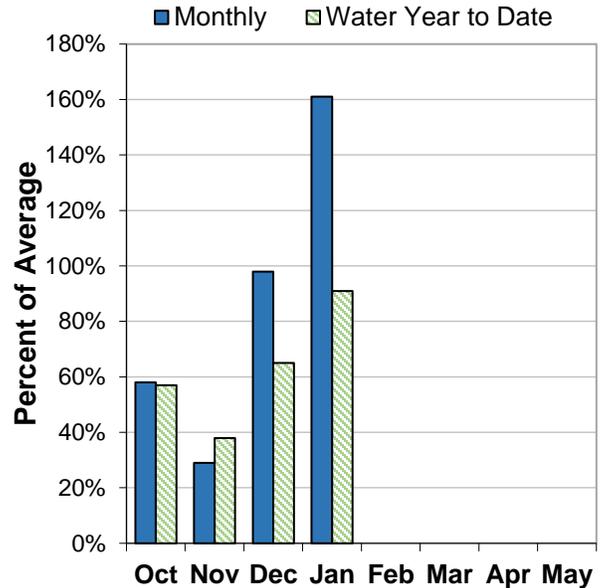
Owyhee and Malheur Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 126% of normal. This is higher than last month when the snowpack was 101% of normal.

PRECIPITATION

January precipitation was 161% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 91% of average.

RESERVOIR

Reservoir storage across the basin is currently above average. As of February 1, storage at major reservoirs in the basin ranges from 106% of average at Beulah Reservoir to 150% of average at Warm Springs Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 88% to 106% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be below normal to near normal this summer.

Owyhee And Malheur Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)	
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)		10% (KAF)
Owyhee R nr Rome	FEB-JUL	250	405	535	92%	680	925	580
	FEB-SEP	260	420	550	92%	700	950	595
	APR-JUL	104	210	300	87%	410	600	345
	APR-SEP	116	225	320	88%	430	620	365
Owyhee R bl Owyhee Dam ²	FEB-JUL	285	450	585	92%	740	995	635
	FEB-SEP	310	480	615	92%	765	1020	665
	APR-JUL	128	235	330	88%	435	620	375
	APR-SEP	155	265	360	89%	470	655	405
Malheur R nr Drewsey	FEB-JUL	53	83	106	91%	132	176	116
	APR-SEP	28	47	63	90%	81	112	70
NF Malheur R at Beulah ²	FEB-JUL	48	72	88	104%	104	128	85
	APR-SEP	35	53	66	106%	78	97	62

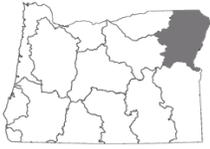
* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Beulah	27.5	14.1	26.0	106%	59.2
Bully Creek	14.3	5.1	12.5	115%	23.7
Lake Owyhee	508.7	273.8	345.3	147%	715.0
Warm Springs	102.5	14.4	68.5	150%	169.6

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	5	139%	94%
South Fork Owyhee Basin	6	133%	90%
Upper Malheur Basin	8	118%	94%
Upper Owyhee Basin	5	134%	92%

Owyhee And Malheur Basins Summary for February 1, 2020

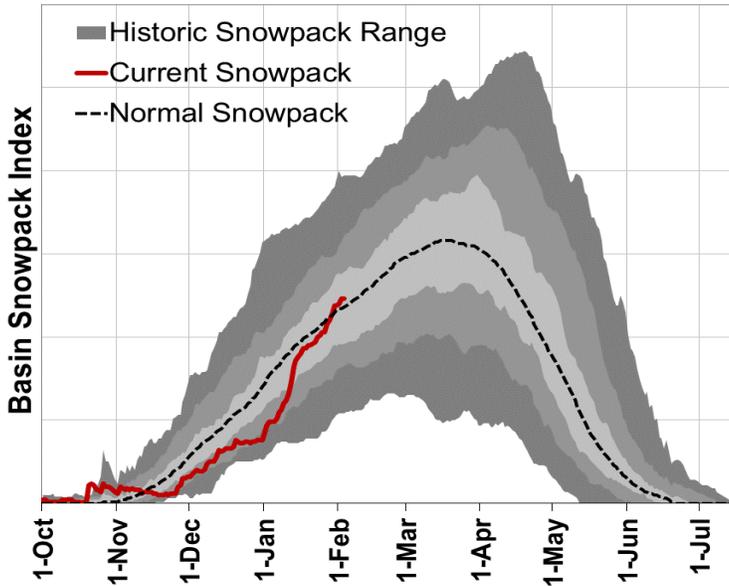
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Feb	46	13.6	10.9	12.1	112%
Trout Creek AM	7890	1-Feb	27	8.0	7.5	8.2	98%
Toe Jam SNOTEL	7700	1-Feb	41	11.8	11.3		
Govt Corrals AM	7400	1-Feb	37	11.1	7.6	7.5	148%
Jack Creek Upper SNOTEL	7250	1-Feb	43	11.9	8.7	9.4	127%
Fawn Creek SNOTEL	7000	1-Feb	46	13.5	9.1	10.2	132%
Merritt Mountain AM	7000	28-Jan	24	7.0	3.8	4.7	149%
Buckskin Lower SNOTEL	6915	1-Feb	28	9.1	6.7	6.5	140%
Gold Creek Snow Course	6707	28-Jan	23	6.8	3.2	4.2	162%
Big Bend SNOTEL	6700	1-Feb	28	8.7	5.5	5.5	158%
Fry Canyon SNOTEL	6700	1-Feb	12	4.3	3.0		
Fry Canyon Snow Course	6700	28-Jan	27	7.7	5.8	6.2	124%
Laurel Draw SNOTEL	6697	1-Feb	37	11.3	7.2	7.7	147%
Columbia Basin AM	6650	28-Jan	33	9.6	4.8	7.8	123%
Louse Canyon AM	6530	1-Feb	23	8.1	5.0	4.2	193%
South Mtn. SNOTEL	6500	1-Feb	35	11.5	8.0	11.5	100%
Succor Creek AM	6310	1-Feb	27	9.7	6.3	7.4	131%
Quinn Ridge AM	6270	1-Feb	10	3.7	0.8	2.0	185%
Taylor Canyon SNOTEL	6200	1-Feb	18	5.6	5.2	4.0	140%
Blue Mountain Spring SNOTEL	5870	1-Feb	47	12.6	10.6	11.2	113%
Barney Creek (New) Snow Course	5830	30-Jan	30	7.2	7.0		
Buck Pasture AM	5740	1-Feb	9	3.2	3.0	2.3	139%
Lookout Butte AM	5740	1-Feb	1	0.3	0.2	0.2	150%
Mud Flat SNOTEL	5730	1-Feb	15	5.3	4.5	5.1	104%
Boulder Creek AM	5710	1-Feb	17	4.8	3.0	2.9	166%
Reynolds Creek SNOTEL	5600	1-Feb	10	3.9	3.9	2.8	139%
Dooley Mountain Snow Course	5440	30-Jan	34	11.4	7.6	6.6	173%
Call Meadows AM	5380	1-Feb	14	5.0	4.5	3.6	139%
Bully Creek AM	5300	1-Feb	12	4.8	2.5	2.9	166%
Rock Springs SNOTEL	5290	1-Feb	14	5.6	4.5	4.7	119%
Lake Creek R.S. SNOTEL	5240	1-Feb	29	8.7	7.8	9.4	93%
Flag Prairie AM	4720	1-Feb	9	3.8	2.8	4.8	79%
Eldorado Pass Snow Course	4630	30-Jan	16	5.4	3.7	2.8	193%



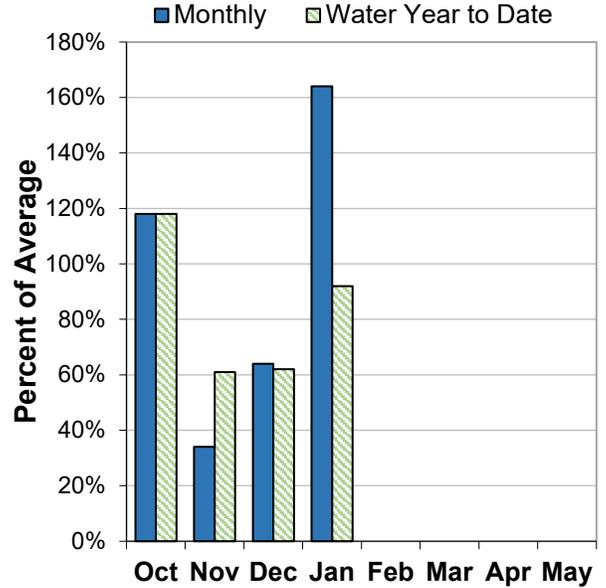
Grande Ronde, Powder, Burnt and Imnaha Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 101% of normal. This is significantly higher than last month when the snowpack was 60% of normal.

PRECIPITATION

January precipitation was 164% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 92% of average.

RESERVOIR

As of February 1, storage at major reservoirs in the basin ranges from 54% of average at Phillips Lake to 154% of average at Wallowa Lake.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 80% to 102% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be below normal to near normal this summer.

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Burnt R nr Hereford ²	FEB-JUL	24	35	44	86%	53	69	51
	APR-SEP	12.2	21	28	80%	36	50	35
Powder R nr Sumpter ²	FEB-JUL	34	46	55	82%	65	81	67
	APR-SEP	25	36	44	81%	52	67	54
Pine Ck nr Oxbow	FEB-JUL	132	172	200	91%	230	270	220
	APR-SEP	85	120	143	88%	167	200	163
Imnaha R at Imnaha	APR-JUL	168	215	250	98%	280	330	255
	APR-SEP	184	235	270	96%	305	355	280
Catherine Ck nr Union	APR-JUL	41	52	59	98%	67	78	60
	APR-SEP	44	55	63	98%	71	82	64
Lostine R nr Lostine	APR-JUL	87	98	105	99%	112	123	106
	APR-SEP	93	105	113	98%	121	132	115
Bear Ck nr Wallowa	APR-JUL	47	57	64	102%	71	80	63
	APR-SEP	49	59	66	102%	73	83	65
Grande Ronde R at Troy	MAR-JUL	1140	1390	1550	103%	1720	1970	1510
	APR-SEP	950	1180	1340	102%	1500	1730	1310

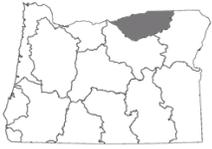
* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Phillips Lake	17.2	6.4	32.0	54%	73.5
Thief Valley	13.6	10.6	12.4	110%	13.3
Unity	12.5	8.0	11.7	107%	25.5
Wallowa Lake	23.3	19.3	15.1	154%	37.5
Wolf Creek	3.4	2.3	2.8	121%	11.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Burnt Basin	5	143%	106%
Imnaha Basin	6	92%	75%
Lower Grande Ronde Basin	4	82%	86%
Powder Basin	13	106%	88%
Upper Grande Ronde Basin	10	109%	94%
Wallowa Basin	8	97%	80%

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for February 1, 2020

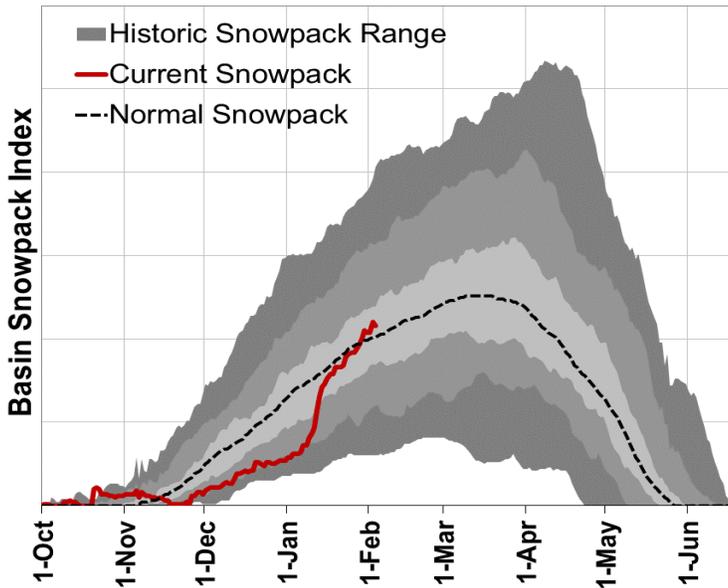
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mirror Lake AM	8120	4-Feb	126	39.1	28.2	40.9	96%
Mt. Howard SNOTEL	7910	1-Feb	23	7.9	7.5	10.2	77%
Aneroid Lake #2 SNOTEL	7400	1-Feb	43	10.8	9.7	14.4	75%
Anthony Lake (Rev) Snow Course	7160	30-Jan	56	15.5	12.5	15.8	98%
TV Ridge AM	7050	1-Feb	28	8.4	7.2	9.9	85%
Bald Mtn AM	6600	1-Feb	74	21.0	17.4	18.0	117%
Little Alps Snow Course	6360	30-Jan	31	6.7	6.4	7.8	86%
Big Sheep AM	6230	1-Feb	37	10.2	10.1	17.2	59%
Bear Saddle SNOTEL	6180	1-Feb	52	14.4	14.5	15.2	95%
Bourne SNOTEL	5850	1-Feb	43	11.9	10.6	11.1	107%
Barney Creek (New) Snow Course	5830	30-Jan	30	7.2	7.0		
Moss Springs SNOTEL	5760	1-Feb	63	18.6	15.0	16.2	115%
Taylor Green SNOTEL	5740	1-Feb	54	16.3	14.0	14.5	112%
Boulder Creek AM	5710	1-Feb	17	4.8	3.0	2.9	166%
Spruce Springs SNOTEL	5700	1-Feb	29	6.8	8.4	11.9	57%
Wolf Creek SNOTEL	5630	1-Feb	41	11.1	10.3	11.6	96%
Milk Shakes SNOTEL	5580	1-Feb	84	25.5	23.7		
West Branch SNOTEL	5560	1-Feb	58	15.8	13.6	14.1	112%
Touchet SNOTEL	5530	1-Feb	60	19.6	20.9	20.4	96%
Eilertson Meadows SNOTEL	5510	1-Feb	30	8.7	8.6	7.9	110%
West Eagle Meadows AM	5500	1-Feb	71	19.9	17.4	21.8	91%
Dooley Mountain Snow Course	5440	30-Jan	34	11.4	7.6	6.6	173%
Gold Center SNOTEL	5410	1-Feb	36	9.5	8.2	7.3	130%
Schneider Meadows SNOTEL	5400	1-Feb	78	21.2	18.1	19.6	108%
Beaver Reservoir SNOTEL	5150	1-Feb	31	8.1	7.2	6.6	123%
Tipton SNOTEL	5150	1-Feb	38	9.1	7.4	8.5	107%
High Ridge SNOTEL	4920	1-Feb	62	20.1	18.8	16.1	125%
County Line SNOTEL	4830	1-Feb	9	3.9	3.1	3.9	100%
Eldorado Pass Snow Course	4630	30-Jan	16	5.4	3.7	2.8	193%
Little Antone (Alt.) Snow Course	4560	30-Jan	28	6.6	6.4	6.8	97%
Bowman Springs SNOTEL	4530	1-Feb	20	7.7	7.4	6.2	124%
East Eagle Snow Course	4400	31-Jan	59	18.6	14.4	14.6	127%
Sourdough Gulch SNOTEL	4000	1-Feb	1	0.7	0.7	0.9	78%



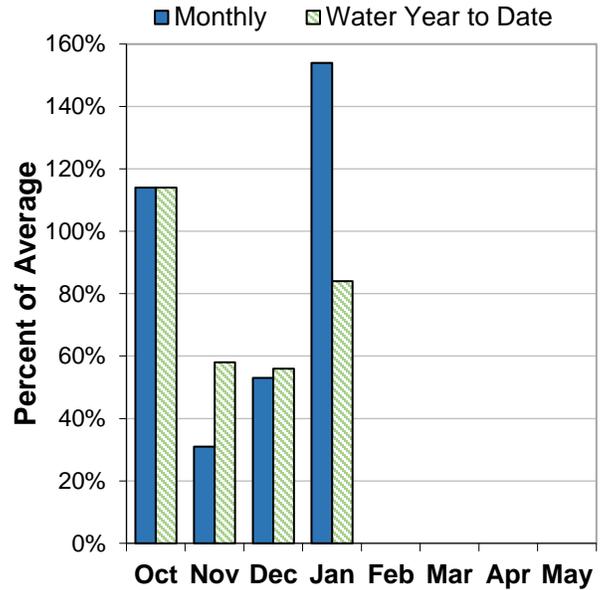
Umatilla, Walla Walla and Willow Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 104% of normal. This is significantly higher than last month when the snowpack was 45% of normal.

PRECIPITATION

January precipitation was 154% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 84% of average.

RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at major reservoirs in the basin ranges from 61% of average at Cold Springs Reservoir to 98% of average at Willow Creek Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 68% to 99% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be well below normal to near normal this summer.

Umatilla, Walla Walla And Willow Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater	MAR-JUL	51	61	67	99%	73	82	68
	APR-SEP	50	59	65	98%	71	80	66
Umatilla R ab Meacham nr Gibbon	MAR-JUL	68	88	101	100%	114	134	101
	APR-SEP	49	67	79	99%	91	109	80
Umatilla R at Pendleton	MAR-JUL	147	191	220	98%	250	295	225
	APR-SEP	86	127	154	98%	182	220	157
McKay Ck nr Pilot Rock	MAR-JUL	22	34	43	84%	54	72	51
	APR-SEP	9.0	17.7	25	86%	34	50	29
Butter Ck nr Pine City	MAR-JUL	5.0	7.8	10.0	67%	12.5	16.8	14.9
	APR-SEP	3.1	5.1	6.8	69%	8.7	12.0	9.8
Willow Ck ab Willow Lk nr Heppner	MAR-JUL	3.1	5.1	6.8	67%	8.8	12.1	10.1
	APR-SEP	1.66	3.3	4.8	68%	6.5	9.5	7.1
Rhea Ck nr Heppner	MAR-JUL	3.2	5.5	7.4	67%	9.7	13.5	11.1
	APR-SEP	1.74	3.5	5.1	68%	7.0	10.2	7.5

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Cold Springs	8.0	12.1	13.1	61%	38.6
Mckay	20.5	26.8	29.8	69%	71.5
Willow Creek	4.1	3.9	4.2	98%	9.8

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5	107%	100%
Walla Walla Basin	7	104%	101%

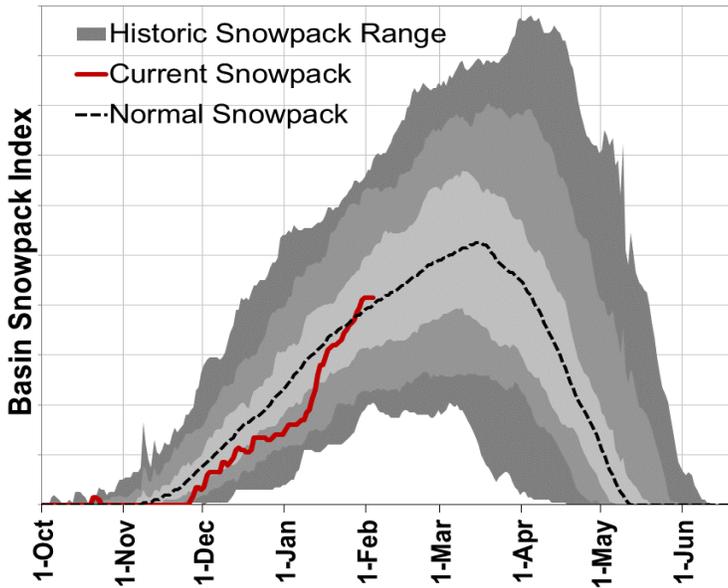
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Feb	38	11.1	10.5	12.2	91%
Spruce Springs SNOTEL	5700	1-Feb	29	6.8	8.4	11.9	57%
Milk Shakes SNOTEL	5580	1-Feb	84	25.5	23.7		
Touchet SNOTEL	5530	1-Feb	60	19.6	20.9	20.4	96%
Madison Butte SNOTEL	5150	1-Feb	11	3.9	4.5	3.8	103%
Lucky Strike SNOTEL	4970	1-Feb	23	7.3	6.3	5.9	124%
High Ridge SNOTEL	4920	1-Feb	62	20.1	18.8	16.1	125%
Bowman Springs SNOTEL	4530	1-Feb	20	7.7	7.4	6.2	124%
Emigrant Springs SNOTEL	3800	1-Feb	8	2.8	2.6	5.4	52%



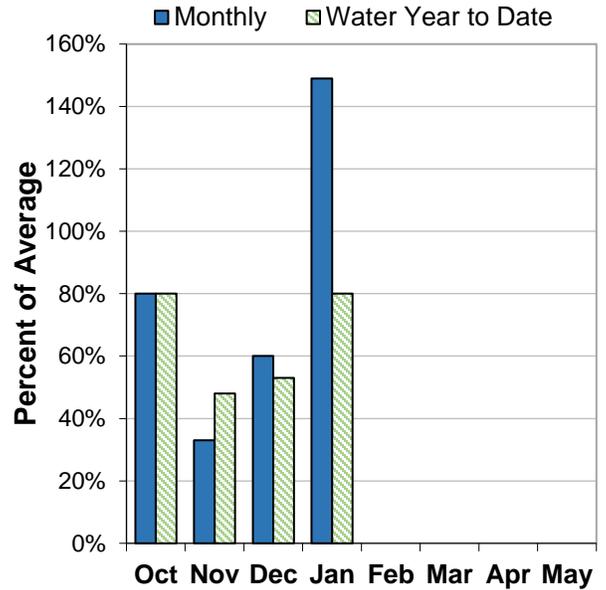
John Day Basin

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 104% of normal. This is significantly higher than last month when the snowpack was 62% of normal.

PRECIPITATION

January precipitation was 149% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 80% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 63% to 100% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be well below normal to near normal this summer.

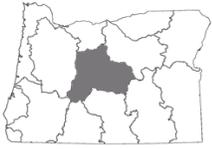
John Day Basin Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Strawberry Ck nr Prairie City	MAR-JUL	4.6	6.4	7.6	89%	8.9	10.7	8.5
	APR-SEP	4.7	6.5	7.8	89%	9.0	10.8	8.8
Mountain Ck nr Mitchell	MAR-JUL	2.1	3.3	4.2	67%	5.2	7.0	6.3
	APR-SEP	1.30	2.3	3.1	63%	4.0	5.6	4.9
Camas Ck nr Ukiah	MAR-JUL	32	42	49	102%	56	66	48
	APR-SEP	17.5	28	35	100%	43	53	35
MF John Day R at Ritter	MAR-JUL	85	123	149	96%	174	210	156
	APR-SEP	63	97	120	95%	143	178	126
NF John Day R at Monument	MAR-JUL	445	605	715	93%	825	985	765
	APR-SEP	315	460	560	93%	660	805	600

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower John Day Basin	4	99%	87%
North Fork John Day Basin	8	105%	92%
Upper John Day Basin	5	101%	90%

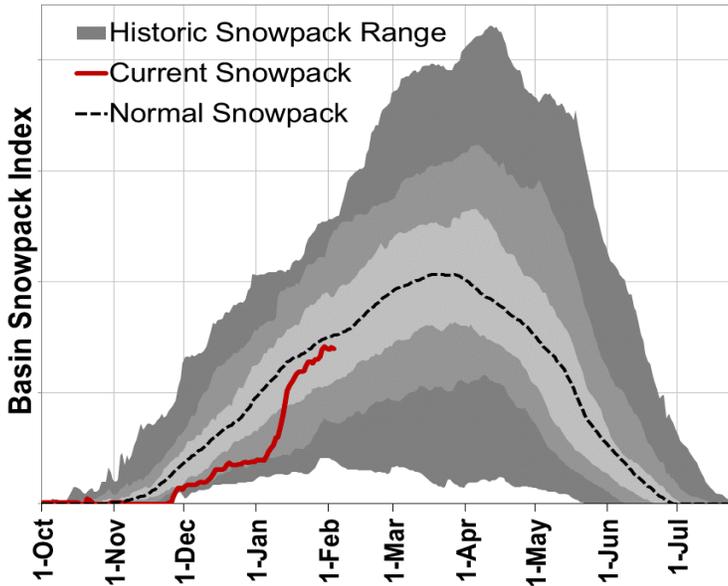
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Anthony Lake (Rev) Snow Course	7160	30-Jan	56	15.5	12.5	15.8	98%
Little Alps Snow Course	6360	30-Jan	31	6.7	6.4	7.8	86%
Snow Mountain SNOTEL	6230	1-Feb	26	7.6	6.2	6.3	121%
Blue Mountain Spring SNOTEL	5870	1-Feb	47	12.6	10.6	11.2	113%
Bourne SNOTEL	5850	1-Feb	43	11.9	10.6	11.1	107%
Derr. SNOTEL	5850	1-Feb	30	8.3	8.2	9.8	85%
Barney Creek (New) Snow Course	5830	30-Jan	30	7.2	7.0		
Arbuckle Mtn SNOTEL	5770	1-Feb	38	11.1	10.5	12.2	91%
Ochoco Meadows SNOTEL	5430	1-Feb	25	7.7	7.8	7.4	104%
Gold Center SNOTEL	5410	1-Feb	36	9.5	8.2	7.3	130%
Starr Ridge SNOTEL	5250	1-Feb	17	5.2	4.8	5.3	98%
Lake Creek R.S. SNOTEL	5240	1-Feb	29	8.7	7.8	9.4	93%
Madison Butte SNOTEL	5150	1-Feb	11	3.9	4.5	3.8	103%
Tipton SNOTEL	5150	1-Feb	38	9.1	7.4	8.5	107%
Lucky Strike SNOTEL	4970	1-Feb	23	7.3	6.3	5.9	124%
County Line SNOTEL	4830	1-Feb	9	3.9	3.1	3.9	100%
Marks Creek Snow Course	4580	29-Jan	8	4.2	0.8	3.4	124%
Little Antone (Alt.) Snow Course	4560	30-Jan	28	6.6	6.4	6.8	97%



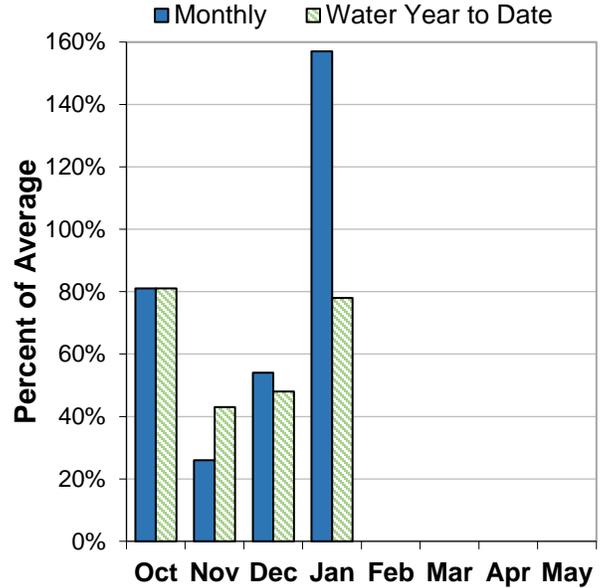
Upper Deschutes and Crooked Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 91% of normal. This is significantly higher than last month when the snowpack was 41% of normal.

PRECIPITATION

January precipitation was 157% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 78% of average.

RESERVOIR

As of February 1, storage at major reservoirs in the basin ranges from 69% of average at Wickiup Reservoir to 119% of average at Crane Prairie Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 55% to 91% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be well below normal to below normal this summer.

Upper Deschutes And Crooked Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	FEB-JUL	18.2	25	30	73%	35	42	41
	FEB-SEP	27	38	46	73%	53	65	63
	APR-JUL	12.0	17.6	22	73%	25	31	30
	APR-SEP	19.3	30	37	71%	44	55	52
Crane Prairie Reservoir Inflow ²	FEB-JUL	38	51	59	78%	67	79	76
	FEB-SEP	51	70	83	78%	95	114	107
	APR-JUL	26	36	42	75%	49	59	56
	APR-SEP	38	55	66	75%	78	95	88
Crescent Lake Inflow ²	FEB-JUL	5.9	9.9	13.1	67%	16.9	23	19.6
	FEB-SEP	4.4	8.8	12.7	58%	17.3	25	22
	APR-JUL	4.8	7.6	10.0	67%	12.6	17.0	15.0
	APR-SEP	3.2	6.6	9.5	55%	13.0	19.1	17.4
Little Deschutes R nr La Pine ²	FEB-JUL	32	49	63	71%	79	105	89
	FEB-SEP	30	48	64	68%	81	111	94
	APR-JUL	21	34	44	70%	55	75	63
	APR-SEP	19.3	33	44	64%	57	80	69
Deschutes R at Benham Falls ²	FEB-JUL	310	360	390	85%	420	465	460
	FEB-SEP	445	500	540	86%	580	640	625
	APR-JUL	230	260	280	88%	300	330	320
	APR-SEP	360	400	430	89%	460	500	485
Wychus Ck nr Sisters	FEB-JUL	30	36	40	93%	45	51	43
	FEB-SEP	38	46	51	93%	56	64	55
	APR-JUL	25	29	32	91%	35	39	35
	APR-SEP	34	39	43	91%	46	52	47
Prineville Reservoir Inflow ²	FEB-JUL	79	122	156	76%	195	260	205
	FEB-SEP	77	121	156	76%	195	260	205
	APR-JUL	27	52	73	72%	98	142	102
	APR-SEP	25	50	72	71%	98	142	102
Ochoco Reservoir Inflow ²	FEB-JUL	16.2	25	32	80%	40	53	40
	FEB-SEP	15.3	24	31	78%	39	53	40
	APR-JUL	6.8	12.0	16.5	79%	22	30	21
	APR-SEP	6.0	11.2	15.6	78%	21	30	20

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

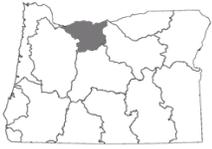
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Upper Deschutes And Crooked Basins Summary for February 1, 2020

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Crane Prairie	44.9	38.7	37.7	119%	55.3
Crescent Lake	45.2	58.8	46.1	98%	86.9
Ochoco	20.8	6.1	18.8	110%	44.2
Prineville	87.7	54.4	86.8	101%	148.6
Wickiup	112.0	103.9	161.7	69%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	95%	71%
Upper Crooked Basin	3	98%	82%
Upper Deschutes Basin	14	91%	66%

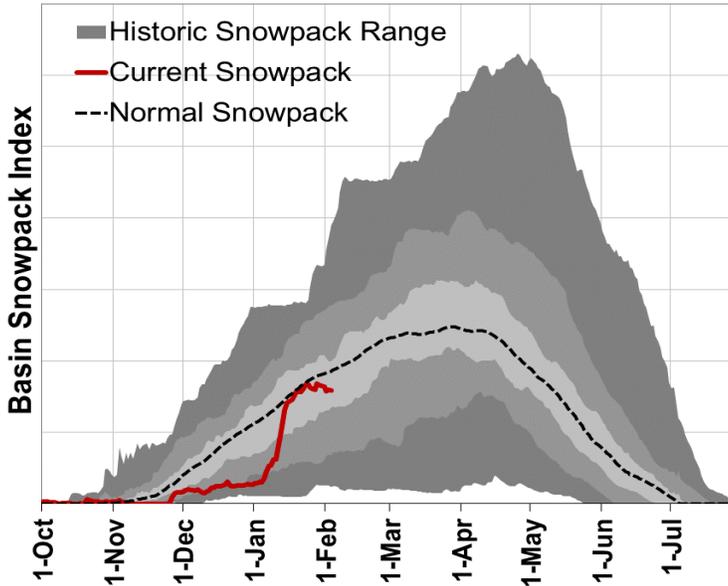
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
New Dutchman #3 Snow Course	6320	31-Jan	82	26.7	20.6	31.9	84%
Snow Mountain SNOTEL	6230	1-Feb	26	7.6	6.2	6.3	121%
Derr. SNOTEL	5850	1-Feb	30	8.3	8.2	9.8	85%
Three Creeks Meadow SNOTEL	5690	1-Feb	32	11.9	8.7	12.4	96%
Summit Lake SNOTEL	5610	1-Feb	57	21.5	16.8	23.7	91%
Bald Peter Snow Course	5600	31-Jan	51	21.0	17.4	19.7	107%
Irish Taylor SNOTEL	5540	1-Feb	58	19.6	16.0	22.7	86%
Tangent Snow Course	5470	31-Jan	40	12.5	9.8	14.5	86%
Ochoco Meadows SNOTEL	5430	1-Feb	25	7.7	7.8	7.4	104%
Racing Creek Snow Course	5160	31-Jan	25	10.6	6.8	10.5	101%
Cascade Summit SNOTEL	5100	1-Feb	57	20.1	15.8	20.4	99%
Roaring River SNOTEL	4950	1-Feb	44	17.2	12.5	18.6	92%
New Crescent Lake SNOTEL	4910	1-Feb	32	11.2	6.5	10.7	105%
Chemult Alternate SNOTEL	4850	1-Feb	17	6.3	5.2	7.6	83%
Hogg Pass SNOTEL	4790	1-Feb	31	12.2	12.6	13.9	88%
McKenzie SNOTEL	4770	1-Feb	60	24.1	16.6	29.8	81%
Marks Creek Snow Course	4580	29-Jan	8	4.2	0.8	3.4	124%
Hungry Flat Snow Course	4400	31-Jan	4	1.2	0.4	2.3	52%
Salt Creek Falls SNOTEL	4220	1-Feb	33	14.1	8.6	13.9	101%
Santiam Jct. SNOTEL	3740	1-Feb	24	11.6	3.9	13.5	86%



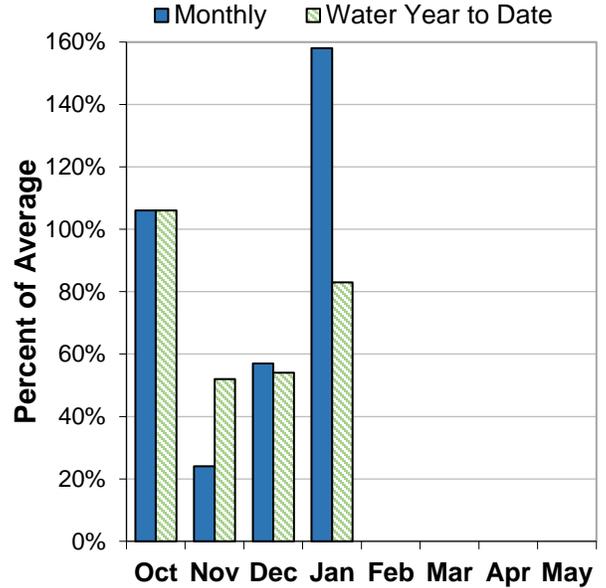
Hood, Sandy and Lower Deschutes Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 86% of normal. This is significantly higher than last month when the snowpack was 32% of normal.

PRECIPITATION

January precipitation was 158% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 83% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 92% to 103% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be below normal to near normal this summer.

Hood, Sandy And Lower Deschutes Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood R nr Dee	APR-JUL	87	109	124	103%	139	162	120
	APR-SEP	103	127	143	103%	159	183	139
Hood R at Tucker Bridge	APR-JUL	157	198	225	100%	255	295	225
	APR-SEP	189	235	265	100%	295	340	265
Sandy R nr Marmot	APR-JUL	215	255	285	92%	315	355	310
	APR-SEP	260	300	330	92%	360	405	360

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Clear Lake	1.0	1.2	3.0	33%	13.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	6	90%	50%
Lower Deschutes Basin	7	86%	60%
Middle Columbia - Hood Basin	6	85%	53%

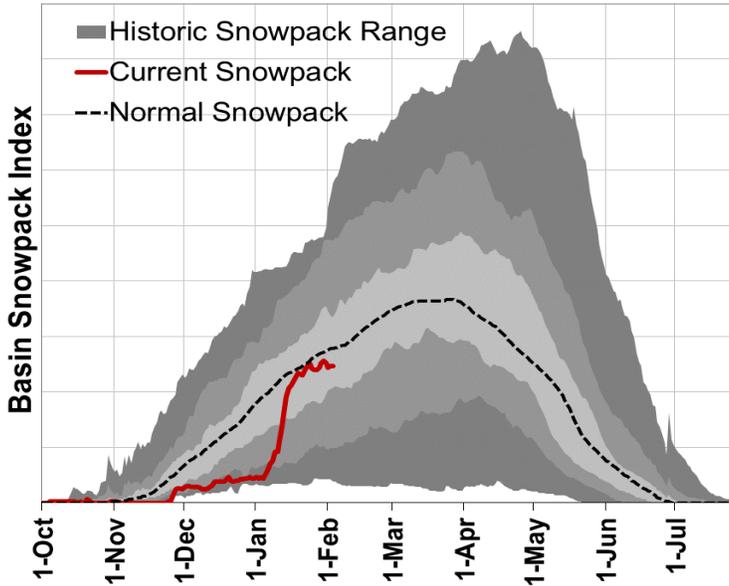
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Bald Peter Snow Course	5600	31-Jan	51	21.0	17.4	19.7	107%
Mt Hood Test Site SNOTEL	5370	1-Feb	89	30.6	22.9	38.4	80%
Racing Creek Snow Course	5160	31-Jan	25	10.6	6.8	10.5	101%
Red Hill SNOTEL	4410	1-Feb	63	30.0	18.3	30.9	97%
Surprise Lakes SNOTEL	4290	1-Feb	71	25.8	21.4	33.3	77%
Beaver Creek #2 Snow Course	4220	30-Jan	14	5.2	3.0	8.0	65%
Beaver Creek #1 Snow Course	4210	30-Jan	24	8.8	4.6	10.0	88%
Clear Lake SNOTEL	3810	1-Feb	15	5.6	4.1	9.7	58%
Blazed Alder SNOTEL	3650	1-Feb	47	20.1	9.5	21.4	94%
Clackamas Lake SNOTEL	3400	1-Feb	20	8.5	4.1	9.2	92%
Greenpoint SNOTEL	3310	1-Feb	17	7.1	5.1	13.2	54%
North Fork SNOTEL	3060	1-Feb	27	13.5	2.8	13.2	102%
South Fork Bull Run SNOTEL	2690	1-Feb	1	3.3	0.0	1.3	254%



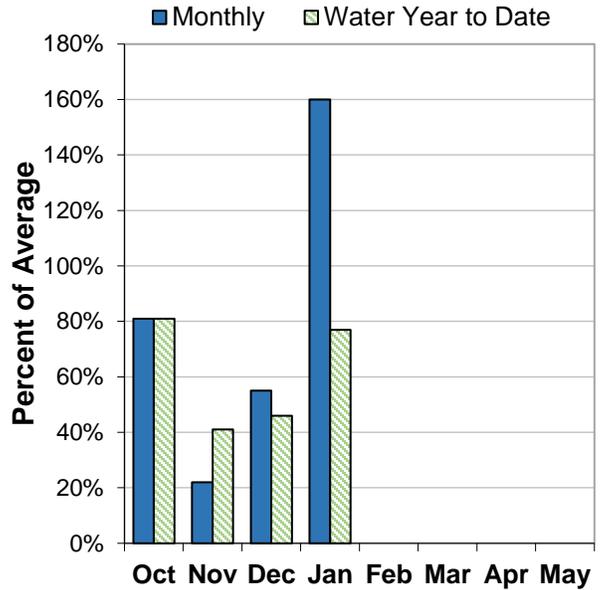
Willamette Basin

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 88% of normal. This is significantly higher than last month when the snowpack was 25% of normal.

PRECIPITATION

January precipitation was 160% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 77% of average.

RESERVOIR

As of February 1, storage at major reservoirs in the basin ranges from 52% of average at Fern Ridge Reservoir to 112% of average at Dorena Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 90% to 103% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be below normal to near normal this summer.

Willamette Basin Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hills Creek Reservoir Inflow ^{1,2}	APR-JUN	138	215	250	102%	285	365	245
	APR-SEP	195	285	325	103%	370	460	315
Lookout Point Reservoir Inflow ^{1,2}	APR-JUN	400	540	605	93%	670	810	650
	APR-SEP	525	685	760	92%	830	995	825
McKenzie R bl Trail Bridge	APR-JUN	145	179	196	93%	215	255	210
	APR-SEP	250	300	325	94%	350	410	345
Cougar Lake Inflow ^{1,2}	APR-JUN	102	147	170	92%	195	255	185
	APR-SEP	137	189	215	91%	245	310	235
Blue Lake Inflow ^{1,2}	APR-JUN	43	62	72	90%	83	109	80
	APR-SEP	40	66	79	92%	94	132	86
McKenzie R nr Vida ^{1,2}	APR-JUN	520	695	780	94%	870	1090	830
	APR-SEP	805	1020	1120	94%	1230	1500	1190
Detroit Lake Inflow ^{1,2}	APR-JUN	215	360	425	90%	490	635	470
	APR-SEP	390	520	580	95%	640	775	610
North Santiam R at Mehama ^{1,2}	APR-JUN	390	540	610	92%	680	830	665
	APR-SEP	570	730	800	95%	870	1030	840
Green Peter Lake Inflow ^{1,2}	APR-JUN	127	210	250	94%	300	415	265
	APR-SEP	171	245	285	97%	325	420	295
Foster Lake Inflow ^{1,2}	APR-JUN	270	400	470	94%	545	720	500
	APR-SEP	325	465	540	96%	615	805	565
South Santiam R at Waterloo ²	APR-JUN	295	430	500	95%	575	755	525
	APR-SEP	345	490	565	96%	645	845	590
Willamette R at Salem ^{1,2}	APR-JUN	2350	3380	3910	99%	4480	5870	3950
	APR-SEP	2950	4110	4700	99%	5330	6850	4730
Oak Grove Fk ab Powerplant	APR-JUL	81	97	108	94%	118	134	115
	APR-SEP	107	127	140	90%	153	173	155
Clackamas R ab Three Lynx	APR-JUL	335	390	430	96%	465	520	450
	APR-SEP	415	470	510	95%	550	610	535
Clackamas R at Estacada	APR-JUL	450	530	585	94%	640	725	625
	APR-SEP	545	630	690	95%	745	830	730

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

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

Willamette Basin Summary for February 1, 2020

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	9.8	11.3	9.5	103%	82.3
Cottage Grove	3.4	7.0	4.9	69%	31.8
Cougar	46.5	42.4	55.3	84%	174.9
Detroit	172.7	170.3	180.5	96%	426.8
Dorena	13.1	16.7	11.7	112%	72.1
Fall Creek	11.8	3.7	16.5	72%	116.0
Fern Ridge	8.3	8.7	16.0	52%	97.3
Foster	22.9	25.9	22.8	101%	46.2
Green Peter	201.1	175.4	182.9	110%	402.8
Hills Creek	93.4	107.5	105.8	88%	279.2
Lookout Point	136.9	125.2	143.9	95%	433.2
Timothy Lake	51.7	55.9	51.0	101%	63.6
Henry Hagg Lake	42.4	32.7	38.0	111%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	8	86%	49%
McKenzie Basin	17	91%	66%
Middle Fork Willamette Basin	7	91%	67%
North Santiam Basin	4	98%	26%
South Santiam Basin	4	97%	20%

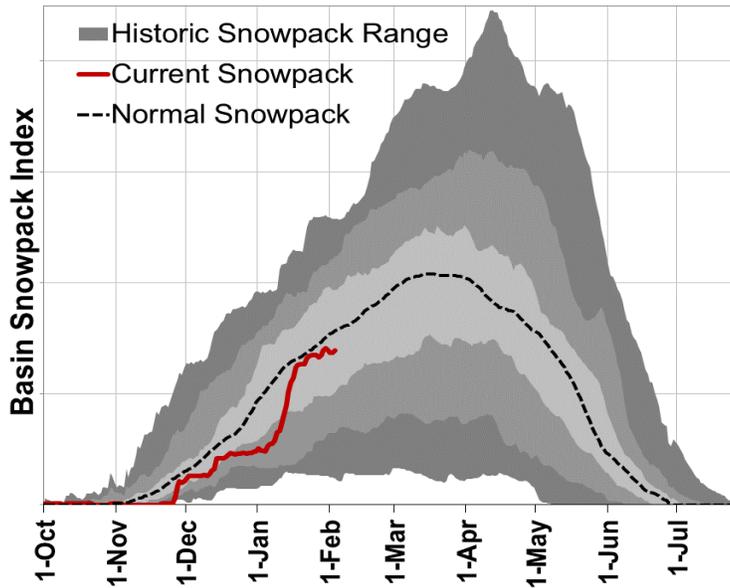
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Feb	57	21.5	16.8	23.7	91%
Irish Taylor SNOTEL	5540	1-Feb	58	19.6	16.0	22.7	86%
Cascade Summit SNOTEL	5100	1-Feb	57	20.1	15.8	20.4	99%
Roaring River SNOTEL	4950	1-Feb	44	17.2	12.5	18.6	92%
Holland Meadows SNOTEL	4930	1-Feb	32	12.5	7.4	16.0	78%
McKenzie SNOTEL	4770	1-Feb	60	24.1	16.6	29.8	81%
Bear Grass SNOTEL	4720	1-Feb	69	28.6	21.1		
Beaver Creek #2 Snow Course	4220	30-Jan	14	5.2	3.0	8.0	65%
Salt Creek Falls SNOTEL	4220	1-Feb	33	14.1	8.6	13.9	101%
Beaver Creek #1 Snow Course	4210	30-Jan	24	8.8	4.6	10.0	88%
Little Meadows SNOTEL	4020	1-Feb	40	17.5	8.1	16.6	105%
Clear Lake SNOTEL	3810	1-Feb	15	5.6	4.1	9.7	58%
Santiam Jct. SNOTEL	3740	1-Feb	24	11.6	3.9	13.5	86%
Daly Lake SNOTEL	3690	1-Feb	22	10.4	0.0	10.0	104%
Jump Off Joe SNOTEL	3520	1-Feb	16	6.8	0.2	9.1	75%
Peavine Ridge SNOTEL	3420	1-Feb		7.2	4.3	10.3	70%
Clackamas Lake SNOTEL	3400	1-Feb	20	8.5	4.1	9.2	92%
Smith Ridge SNOTEL	3270	1-Feb	10	5.0	0.0		
Saddle Mountain SNOTEL	3110	1-Feb	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Feb	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Feb	7	6.2	0.0	6.3	98%
Seine Creek SNOTEL	2060	1-Feb	0	0.0	0.0	0.2	0%
Miller Woods SNOTEL	420	1-Feb	0	0.0	0.0		



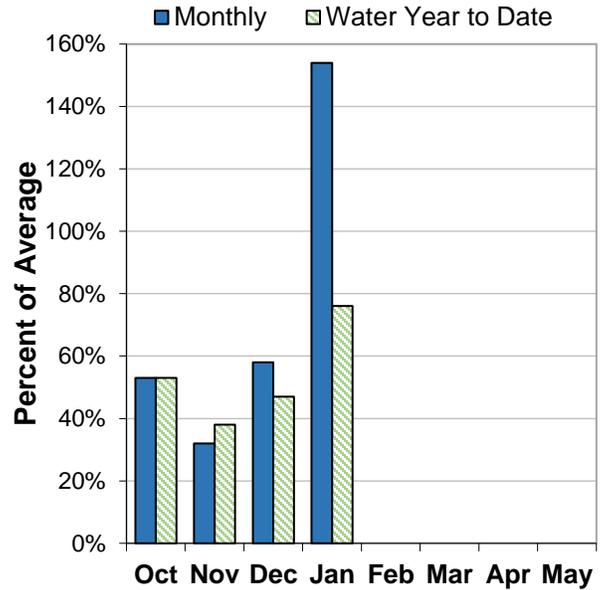
Rogue and Umpqua Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 89% of normal. This is significantly higher than last month when the snowpack was 49% of normal.

PRECIPITATION

January precipitation was 154% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 76% of average.

RESERVOIR

As of February 1, storage at major reservoirs in the basin ranges from 43% of average at Fourmile Lake to 128% of average at Applegate Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 86% to 98% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be below normal to near normal this summer.

Rogue And Umpqua Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
South Umpqua R at Tiller	APR-JUL	99	150	185	96%	220	270	193
	APR-SEP	108	160	195	98%	230	280	200
Cow Ck ab Galesville Reservoir	APR-JUL	4.0	9.7	13.6	98%	17.5	23	13.9
	APR-SEP	4.8	10.6	14.6	97%	18.6	24	15.0
South Umpqua R nr Brockway	APR-JUL	149	285	380	97%	475	610	390
	APR-SEP	164	305	395	96%	490	630	410
North Umpqua R at Winchester	APR-JUL	410	555	730	94%	750	895	775
	APR-SEP	585	735	835	94%	940	1090	890
Lost Creek Lk Inflow ²	FEB-JUL	535	635	700	88%	765	865	795
	FEB-SEP	625	735	810	88%	885	995	920
	APR-JUL	350	420	470	90%	515	585	520
	APR-SEP	445	525	580	90%	635	715	645
Rogue R at Raygold ²	APR-JUL	405	555	660	98%	765	915	675
	APR-SEP	505	675	790	98%	900	1070	805
Rogue R at Grants Pass ²	APR-JUL	445	585	685	94%	780	920	725
	APR-SEP	540	700	805	95%	910	1070	845
Applegate Lake Inflow ²	FEB-JUL	64	127	170	87%	215	275	195
	FEB-SEP	69	133	176	88%	220	285	200
	APR-JUL	34	69	93	85%	117	152	109
	APR-SEP	40	76	100	87%	124	160	115
Sucker Ck bl Ltl Grayback nr Holland	APR-JUL	8.9	22	31	56%	40	52	55
	APR-SEP	29	42	51	86%	60	73	59
Illinois R nr Kerby	APR-JUL	88	134	165	88%	196	240	188
	APR-SEP	92	139	170	88%	200	250	193

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume.
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage					
	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Applegate	13.8	16.7	10.8	128%	75.2
Emigrant Lake	16.5	11.9	21.6	76%	39.0
Fish Lake	3.6	3.5	4.8	74%	7.9
Fourmile Lake	3.0	3.1	6.9	43%	15.6
Howard Prairie	17.7	17.7	36.1	49%	62.1
Hyatt Prairie	6.9	1.8	10.2	67%	16.2
Lost Creek	153.1	164.9	161.8	95%	315.0

Rogue And Umpqua Basins Summary for February 1, 2020

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	5	75%	52%
Middle Rogue Basin	8	73%	49%
North Umpqua Basin	7	95%	54%
South Umpqua Basin	10	127%	31%
Upper Rogue Basin	11	90%	67%

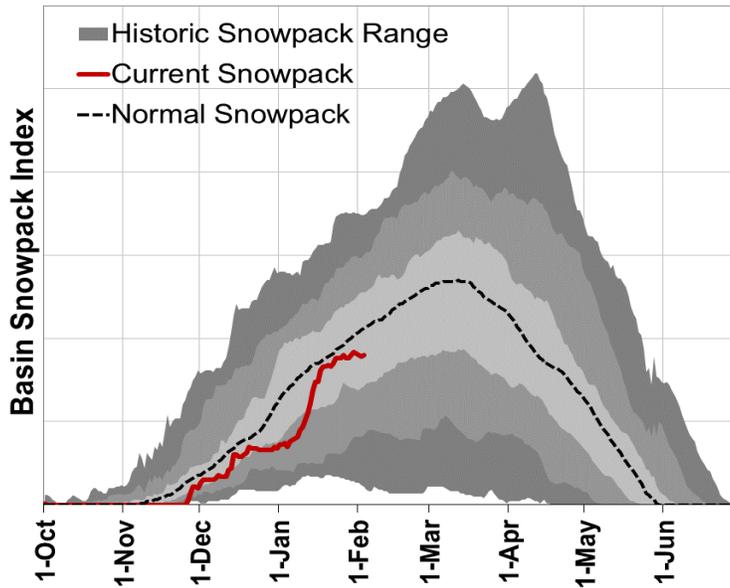
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Park H.Q. Rev Snow Course	6570	29-Jan	93	32.2	29.6	36.9	87%
Caliban (Alt.) Snow Course	6500	31-Jan	42	13.4	12.8	20.2	66%
Mt. Ashland Switchback Snow Course	6430	31-Jan	37	14.4	10.0	21.2	68%
Ski Bowl Road Snow Course	6070	31-Jan	28	9.0	6.8	15.0	60%
Big Red Mountain SNOTEL	6050	1-Feb	39	13.1	10.5	17.6	74%
Annie Springs SNOTEL	6010	1-Feb	57	19.6	18.4	26.8	73%
Fourmile Lake SNOTEL	5970	1-Feb	51	18.2	13.3	21.2	86%
Cold Springs Camp SNOTEL	5940	1-Feb	40	16.9	11.5	22.5	75%
Sevenmile Marsh SNOTEL	5700	1-Feb	56	21.9	14.1	20.0	110%
Summit Lake SNOTEL	5610	1-Feb	57	21.5	16.8	23.7	91%
Billie Creek Divide SNOTEL	5280	1-Feb	45	16.3	11.4	16.7	98%
Diamond Lake SNOTEL	5280	1-Feb	21	9.3	7.5	12.2	76%
Bigelow Camp SNOTEL	5130	1-Feb	26	12.2	3.2	8.9	137%
Beaver Dam Creek Snow Course	5120	30-Jan	23	9.6	5.0	10.2	94%
King Mountain 1 Snow Course	4760	30-Jan	20	6.7	1.2	3.8	176%
Deadwood Junction Snow Course	4660	30-Jan	17	7.3	7.1	6.2	118%
Fish Lk. SNOTEL	4660	1-Feb	28	9.8	5.4	9.1	108%
Howard Prairie SNOTEL	4580	1-Feb	13	4.7	2.9		
Howard Prairie Snow Course	4580	30-Jan	9	3.9	1.7	5.9	66%
Siskiyou Summit Rev. 2 Snow Course	4560	31-Jan	10	3.6	2.6	5.5	65%
Red Butte 1 Snow Course	4460	29-Jan	27	10.0	2.5	7.4	135%
King Mountain SNOTEL	4340	1-Feb	4	2.4	0.0	2.5	96%
Red Butte 2 Snow Course	4050	29-Jan	7	2.5	0.0	2.3	109%
Silver Burn Snow Course	3680	29-Jan	27	10.3	5.0	8.2	126%
King Mountain 3 Snow Course	3680	30-Jan	0	0.0	0.0	0.0	
Red Butte 3 Snow Course	3500	29-Jan	1	0.3	0.0	0.4	75%
Toketee Airstrip SNOTEL	3240	1-Feb	7	3.3	0.0	3.4	97%
King Mountain 4 Snow Course	3050	30-Jan	0	0.0	0.0	0.0	
Red Butte 4 Snow Course	3000	29-Jan	0	0.0	0.0	0.0	



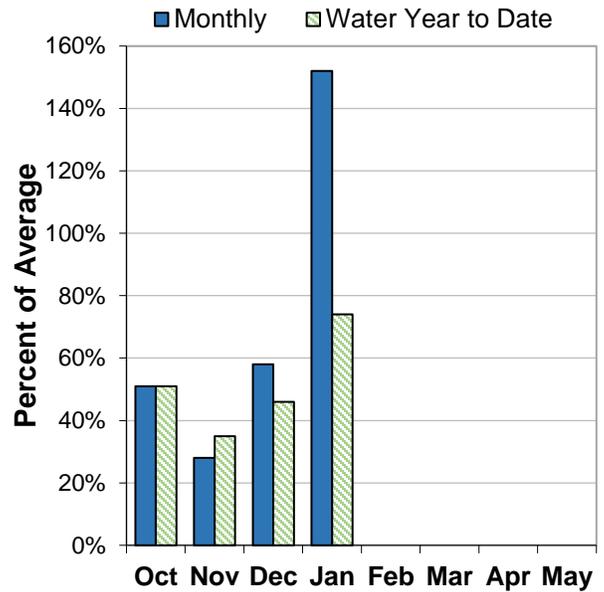
Klamath Basin

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 85% of normal. This is significantly higher than last month when the snowpack was 53% of normal.

PRECIPITATION

January precipitation was 152% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 74% of average.

RESERVOIR

Reservoir storage across the basin is currently above average. As of February 1, storage at major reservoirs in the basin ranges from 106% of average at Clear Lake to 154% of average at Gerber Reservoir.

STREAMFLOW FORECAST

The March through September streamflow forecasts in the basin range from 70% to 75% of average. Overall, forecasts increased slightly from last month's report. If conditions remain similar, water supplies in the basin are likely to be well below normal this summer.

Klamath Basin Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Gerber Reservoir Inflow ²	FEB-JUL	3.8	21	33	80%	45	62	41
	APR-SEP	0.00	3.2	10.1	70%	17.0	27	14.4
Sprague R nr Chiloquin	FEB-SEP	147	200	240	75%	290	370	320
	MAR-SEP	115	163	200	73%	240	310	275
Williamson R bl Sprague nr Chiloquin	FEB-SEP	250	350	415	78%	480	580	530
	MAR-SEP	191	285	345	75%	405	500	460
Upper Klamath Lake Inflow ^{1,2}	FEB-SEP	340	510	600	75%	695	930	795
	MAR-SEP	260	405	480	74%	560	765	645

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

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					Useable Capacity
	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	(KAF)
Clear Lake	211.3	159.2	199.0	106%	513.3
Gerber	67.2	55.9	43.5	154%	94.3
Upper Klamath Lake	355.8	301.0	319.0	112%	523.7

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lost Basin	4	58%	59%
Sprague Basin	8	88%	92%
Upper Klamath Lake Basin	8	88%	67%
Williamson River Basin	5	81%	72%

Klamath Basin Summary for February 1, 2020

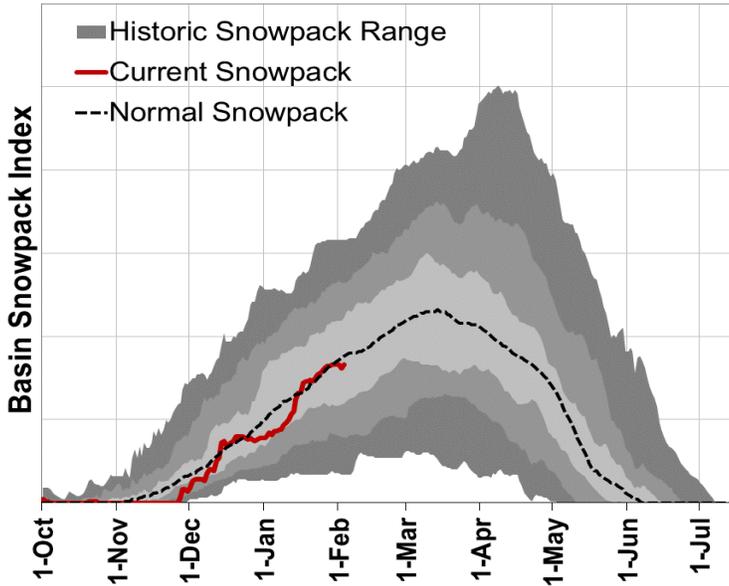
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Feb	22	7.6	10.4	11.1	68%
Swan Lake Mtn SNOTEL	6830	1-Feb	45	15.7	14.5		
Park H.Q. Rev Snow Course	6570	29-Jan	93	32.2	29.6	36.9	87%
Colvin Creek AM	6520	1-Feb	7	2.6	2.9	2.5	104%
Crazyman Flat SNOTEL	6180	1-Feb	25	9.5	11.4	10.9	87%
Ski Bowl Road Snow Course	6070	31-Jan	28	9.0	6.8	15.0	60%
Annie Springs SNOTEL	6010	1-Feb	57	19.6	18.4	26.8	73%
Finley Corrals AM	6000	1-Feb	36	11.6	11.8	9.8	118%
Fourmile Lake SNOTEL	5970	1-Feb	51	18.2	13.3	21.2	86%
Cold Springs Camp SNOTEL	5940	1-Feb	40	16.9	11.5	22.5	75%
Strawberry SNOTEL	5770	1-Feb	8	4.2	3.6	4.4	95%
Cox Flat AM	5750	1-Feb	11	3.5	3.3	5.4	65%
Silver Creek SNOTEL	5740	1-Feb	21	7.7	6.5	8.1	95%
Quartz Mountain SNOTEL	5720	1-Feb	2	0.5	2.0	1.5	33%
Sevenmile Marsh SNOTEL	5700	1-Feb	56	21.9	14.1	20.0	110%
State Line SNOTEL	5680	1-Feb	12	4.8	5.5		
Sycan Flat AM	5580	1-Feb	10	3.7	3.5	4.0	93%
Sun Pass SNOTEL	5400	1-Feb	41	13.2	10.8		
Billie Creek Divide SNOTEL	5280	1-Feb	45	16.3	11.4	16.7	98%
Diamond Lake SNOTEL	5280	1-Feb	21	9.3	7.5	12.2	76%
Crowder Flat SNOTEL	5170	1-Feb	2	1.6	2.4	3.7	43%
Beaver Dam Creek Snow Course	5120	30-Jan	23	9.6	5.0	10.2	94%
Taylor Butte SNOTEL	5030	1-Feb	9	4.5	3.2	5.5	82%
Dog Hollow AM	4920	1-Feb	0	0.0	0.0	1.0	0%
Gerber Reservoir SNOTEL	4890	1-Feb	0	0.3	0.3	1.5	20%
Chemult Alternate SNOTEL	4850	1-Feb	17	6.3	5.2	7.6	83%
Deadwood Junction Snow Course	4660	30-Jan	17	7.3	7.1	6.2	118%
Fish Lk. SNOTEL	4660	1-Feb	28	9.8	5.4	9.1	108%
Howard Prairie SNOTEL	4580	1-Feb	13	4.7	2.9		
Howard Prairie Snow Course	4580	30-Jan	9	3.9	1.7	5.9	66%
Siskiyou Summit Rev. 2 Snow Course	4560	31-Jan	10	3.6	2.6	5.5	65%



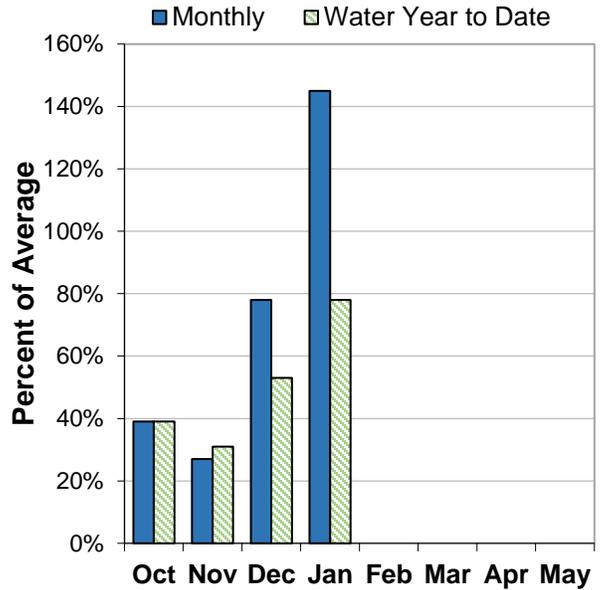
Lake County and Goose Lake Basins

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 100% of normal. This is higher than last month when the snowpack was 79% of normal.

PRECIPITATION

January precipitation was 145% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 78% of average.

RESERVOIR

As of February 1, storage at major reservoirs in the basin ranges from 68% of average at Cottonwood Reservoir to 139% of average at Drews Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 96% to 132% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be near normal to well above normal this summer.

Lake County And Goose Lake Basins Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Twentymile Ck nr Adel	MAR-JUL	14.4	28	37	137%	46	60	27
	APR-SEP	6.4	16.3	23	132%	30	40	17.4
Deep Ck ab Adel	MAR-JUL	60	79	93	118%	106	125	79
	APR-SEP	48	64	75	115%	86	102	65
Honey Ck nr Plush	MAR-JUL	8.3	15.5	20	117%	25	32	17.1
	APR-SEP	6.1	12.2	16.4	116%	21	27	14.1
Chewaucan R nr Paisley	MAR-JUL	50	69	83	99%	96	115	84
	APR-SEP	46	61	72	96%	83	99	75

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage					Useable Capacity
	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	(KAF)
Cottonwood	2.7	0.8	3.9	68%	9.3
Drews	39.5	23.9	28.4	139%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	7	109%	105%
Lake Abert Basin	7	92%	100%
Summer Lake Basin	12	100%	100%
Upper Pit Basin	3	95%	103%

Lake County And Goose Lake Basins Summary for February 1, 2020

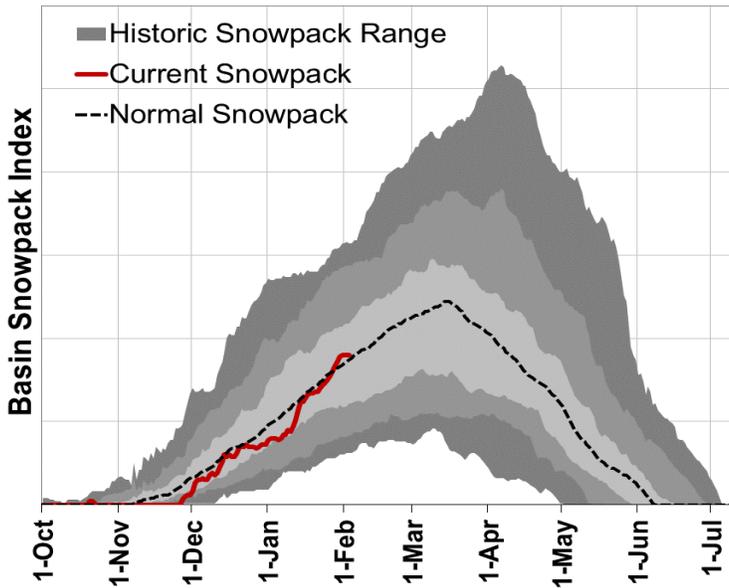
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Dismal Swamp SNOTEL	7360	1-Feb	65	23.1	19.0	18.0	128%
Summer Rim SNOTEL	7080	1-Feb	22	7.6	10.4	11.1	68%
Cedar Pass Snow Course	7050	29-Jan	41	11.3	11.3	10.2	111%
Cedar Pass SNOTEL	7030	1-Feb	36	12.1	11.0	11.3	107%
Barley Camp AM	6890	1-Feb	40	13.2	13.7	10.0	132%
Blue Lake Ranch Snow Course	6830	29-Jan	19	4.4	7.7	6.3	70%
Patton Meadows AM	6800	1-Feb	31	10.8	11.8	10.2	106%
Sherman Valley AM	6640	1-Feb	20	6.5	7.2	8.0	81%
Bear Flat Meadow AM	6580	1-Feb	19	6.8	8.9	7.4	92%
Colvin Creek AM	6520	1-Feb	7	2.6	2.9	2.5	104%
Hart Mountain AM	6430	1-Feb	6	1.9	2.3	1.4	136%
Rogger Meadow AM	6360	1-Feb	31	9.2	9.5	7.7	119%
Adin Mtn Snow Course	6190	3-Feb	26	9.7	11.0	8.8	110%
Adin Mtn SNOTEL	6190	1-Feb	22	8.8	10.8	8.6	102%
Crazyman Flat SNOTEL	6180	1-Feb	25	9.5	11.4	10.9	87%
Finley Corrals AM	6000	1-Feb	36	11.6	11.8	9.8	118%
Camas Creek #3 Snow Course	5860	30-Jan	32	9.9	8.6	8.8	113%
Strawberry SNOTEL	5770	1-Feb	8	4.2	3.6	4.4	95%
Cox Flat AM	5750	1-Feb	11	3.5	3.3	5.4	65%
Silver Creek SNOTEL	5740	1-Feb	21	7.7	6.5	8.1	95%
State Line SNOTEL	5680	1-Feb	12	4.8	5.5		
Sycan Flat AM	5580	1-Feb	10	3.7	3.5	4.0	93%
Crowder Flat SNOTEL	5170	1-Feb	2	1.6	2.4	3.7	43%



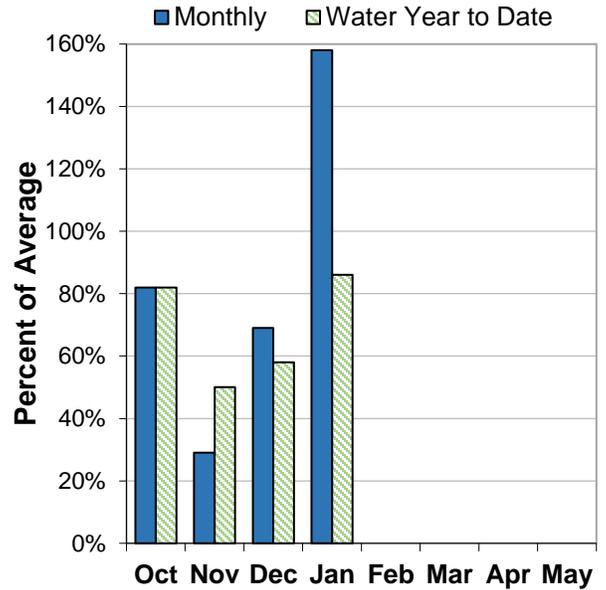
Harney Basin

February 1, 2020

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of February 1, the basin snowpack was 111% of normal. This is significantly higher than last month when the snowpack was 74% of normal.

PRECIPITATION

January precipitation was 158% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 86% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 113% to 123% of average. Overall, forecasts increased significantly from last month's report. If conditions remain similar, water supplies in the basin are likely to be above normal to well above normal this summer.

Harney Basin Summary for February 1, 2020

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts February 1, 2020	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Silvies R nr Burns	MAR-JUL	74	118	148	120%	179	225	123
	APR-SEP	58	91	113	123%	135	168	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	54	73	85	118%	97	116	72
	APR-SEP	50	69	81	119%	93	112	68
Trout Ck nr Denio	MAR-JUL	4.6	7.8	10.0	115%	12.2	15.4	8.7
	APR-SEP	3.5	6.8	9.0	113%	11.2	14.5	8.0

* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Alvord Lake Basin	6	121%	82%
Donner und Blitzen River Basin	5	111%	74%
Silvies River Basin	4	105%	91%
Upper Quinn Basin	6	127%	89%

Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Feb	46	13.6	10.9	12.1	112%
Trout Creek AM	7890	1-Feb	27	8.0	7.5	8.2	98%
Fish Creek SNOTEL	7660	1-Feb	60	16.8	11.2	15.8	106%
Govt Corrals AM	7400	1-Feb	37	11.1	7.6	7.5	148%
Oregon Canyon AM	7050	1-Feb	20	6.4	2.3	4.0	160%
Silvies SNOTEL	6990	1-Feb	34	9.8	6.7	9.6	102%
Buckskin Lower SNOTEL	6915	1-Feb	28	9.1	6.7	6.5	140%
V Lake AM	6600	1-Feb	21	6.7	3.5	5.2	129%
Louse Canyon AM	6530	1-Feb	23	8.1	5.0	4.2	193%
Disaster Peak SNOTEL	6500	1-Feb	15	5.6	5.5	5.6	100%
Hart Mountain AM	6430	1-Feb	6	1.9	2.3	1.4	136%
Quinn Ridge AM	6270	1-Feb	10	3.7	0.8	2.0	185%
Snow Mountain SNOTEL	6230	1-Feb	26	7.6	6.2	6.3	121%
Lamance Creek SNOTEL	6000	1-Feb	28	10.8	6.2	8.0	135%
Blue Mountain Spring SNOTEL	5870	1-Feb	47	12.6	10.6	11.2	113%
Buck Pasture AM	5740	1-Feb	9	3.2	3.0	2.3	139%
Call Meadows AM	5380	1-Feb	14	5.0	4.5	3.6	139%
Rock Springs SNOTEL	5290	1-Feb	14	5.6	4.5	4.7	119%
Starr Ridge SNOTEL	5250	1-Feb	17	5.2	4.8	5.3	98%
Lake Creek R.S. SNOTEL	5240	1-Feb	29	8.7	7.8	9.4	93%
Buckskin Lake AM	5190	1-Feb	0	0.0	0.0	0.1	0%

Recession Forecasts for Oregon

Recession flow forecasts are presented below for key streamflow sites where reliable daily streamflow data are available. The recession flow forecasts use exceedance probabilities in a format similar to the standard water supply forecasts presented in this document. Each forecast provides a range of possible outcomes representing the uncertainty of forecasting models.

The types of forecasts in the table below are:

- 1) Threshold flow -- Date that the daily streamflow rate falls below the given threshold flow
- 2) Peak flow -- Maximum daily flow
- 3) Date of peak flow -- Date of occurrence of maximum daily flow
- 4) Average daily flow on a given date

OWYHEE AND MALHEUR BASINS					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
		Owyhee R nr Rome	2000 cfs	Feb 27	
Owyhee R nr Rome	1000 cfs	Mar 2	Apr 9	May 22	May 18
Owyhee R nr Rome	500 cfs	Mar 15	Apr 25	Jun 5	June 2

UPPER JOHN DAY BASIN					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
		John Day R at Service Creek	Average Daily Flow on Aug. 1st	30	

UPPER DESCHUTES AND CROOKED BASINS					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
		Crane Prairie Inflow *	Date of Peak		
Crane Prairie Inflow	Peak Flow	205	355	505	403
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	127	200	270	269
Prineville Reservoir Inflow	150 cfs	Apr 22	May 17	Jun 11	May 30
Prineville Reservoir Inflow	80 cfs	Apr 26	May 21	Jun 15	June 7
Whychus Creek nr Sisters	100 cfs	Jul 3	Jul 28	Aug 27	August 16

*No prediction possible until April 1. Historic values are shown for reference prior to the April 1 report.

ROGUE AND UMPQUA BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
South Umpqua R nr Brockway *	90 cfs	Jul 9	Jul 28	Aug 12	August 8
South Umpqua R at Tiller	140 cfs	Jun 10	Jul 2	Jul 23	July 11
South Umpqua R at Tiller	90 cfs	Jun 29	Jul 23	Aug 12	August 1
South Umpqua R at Tiller	60 cfs	Jul 23	Aug 22	Sep 21	August 28

*Dates are based on streamflow data adjusted for releases from Galesville Reservoir to reflect natural flow conditions and do not match observed gage data. There is an approximately 20% chance in any given year that the flow will not recede below 90 cfs; the dates given here are for the event that the flow does recede below 90 cfs.

LAKE COUNTY AND GOOSE LAKE BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Deep Ck ab Adel	100 cfs	May 14	Jun 3	Jun 23	June 17
Honey Ck nr Plush	100 cfs	Mar 16	Apr 20	May 25	May 16
Honey Ck nr Plush	50 cfs	Mar 31	May 2	Jun 3	June 4
Twentymile Ck nr Adel	50 cfs	Apr 4	May 4	Jun 3	May 30
Twentymile Ck nr Adel	10 cfs	May 30	Jun 22	Jul 15	July 7

HARNEY BASIN					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Silvies R nr Burns	400 cfs	Apr 4	May 8	Jun 5	May 21
Silvies R nr Burns	200 cfs	Apr 10	May 8	Jun 5	June 2
Silvies R nr Burns	100 cfs	Apr 20	May 19	Jun 17	June 13
Silvies R nr Burns	50 cfs	May 7	Jun 11	Jul 16	July 3
Donner Und Blitzen R nr Frenchglen	200 cfs	May 9	May 31	Jun 22	June 20
Donner Und Blitzen R nr Frenchglen	100 cfs	May 30	Jun 19	Jul 9	July 9

Basin Outlook Reports: How Forecasts Are Made

Federal – State – Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

USDA, Natural Resources Conservation Service
Snow Survey Office
1201 NE Lloyd Suite 900
Portland, OR 97232
Phone: (503) 414-3271
Web site <http://www.or.nrcs.usda.gov/snow>

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. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertainty is in the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount. By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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. Streamflow forecasts help users make risk-based decisions. Water 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. 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. AF stands for acre-feet. Forecasted volumes of water are typically in thousands of acre-feet.

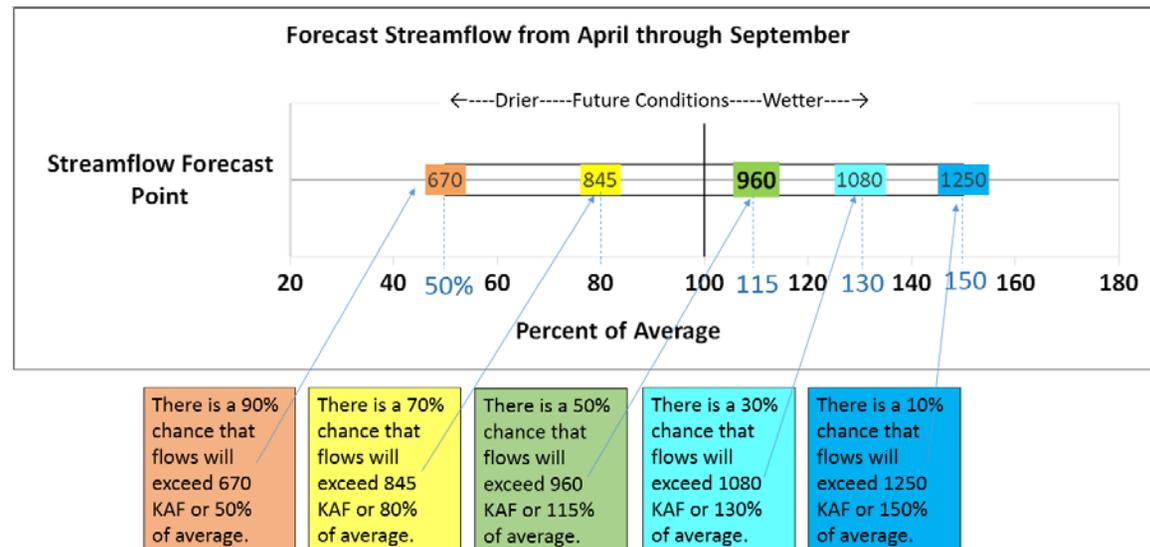
30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year average streamflow.

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.

Graphical Representation of Streamflow Forecast Range:

This type of graphic is used in the state-wide streamflow forecast summary



Using the Forecasts - an Example

Using the 50 Percent Exceedance Forecast. Using the example forecasts shown here, there is a 50% chance that actual streamflow volume at the Mountain Creek near Mitchell will be less than 4.4 KAF between April 1 and Sept 30. There is also a 50% chance that actual streamflow volume will be greater than 4.4 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 3.3 KAF (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 3.3 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 1.7 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 1.7 KAF.

JOHN DAY BASIN Streamflow Forecasts - February 1, 2013								
Forecast Point	Forecast Period	Drier Future Conditions			Wetter			30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)		
Strawberry Ck nr Prairie City	MAR-JUL	5.0	6.6	7.6	89	8.6	10.2	8.5
	APR-SEP	5.2	6.8	7.9	90	9.0	10.6	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.2	5.4	6.9	99	8.4	10.6	7.0
	APR-SEP	1.7	3.3	4.4	90	5.5	7.1	4.9

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

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 5.5 KAF (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 5.5 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 7.1 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 7.1 KAF.

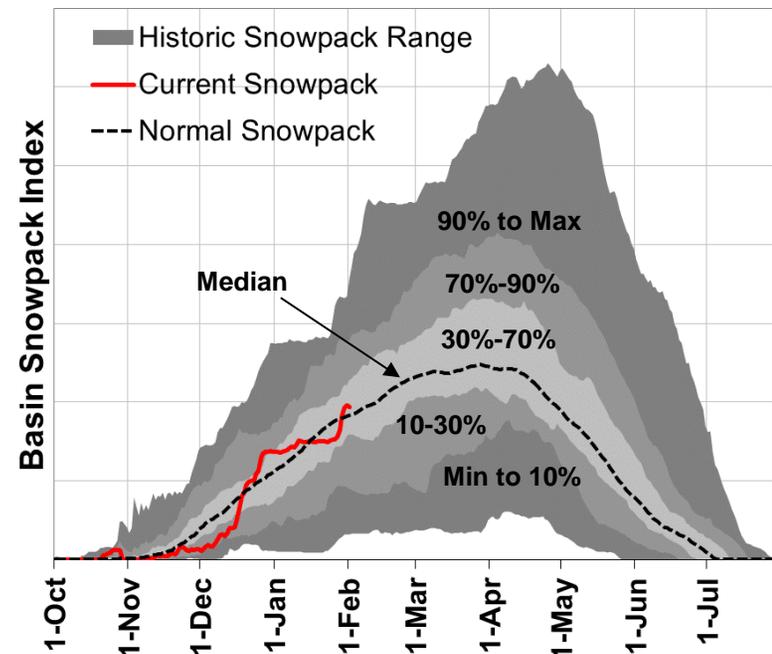
Interpreting Snowpack Plots

The basin snowpack plots display an index calculated using daily SNOTEL data for many sites in each basin. They show how the current year's snowpack data compares to historical data in the basin. The "Current Snowpack" line can be compared with the "Normal Snowpack" (median) line, as well as the historic range of snowpack in the basin.

The grey shaded areas represent different percentiles of the historical range of the snowpack index for each day. The dark grey shading indicates the extreme lows and highs in the SNOTEL record (minimum to the 10th percentile and the 90th percentile to maximum). The medium grey shading indicates the range from the 10th to 30th percentiles and the 70th to 90th percentiles. The light grey shading indicates the range between the 30th to 70th percentiles, while the median is the 50th percentile. A percentile is the value of the snowpack index below which the given percent of historical years fall. For instance, the 90th percentile line indicates that the snowpack index has been below this line for 90 percent of the years of record.

** Please note: These plots only use daily data from SNOTEL sites in the basin. Because snow course data is collected monthly, it cannot be included in these plots. The official snowpack percent of normal for the basin incorporates both SNOTEL and snow course data, so occasionally there might be slight discrepancies between the plot and official basin percent of normal (stated in basin summary below each plot).

Mountain Snowpack



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Official Business



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<http://www.or.nrcs.usda.gov/snow>

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