



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

January 1, 2019



Surface hoar formation on a post near Silver Burn snow course
Photo courtesy of Chris Gebauer (NRCS Soil Survey, Klamath Falls, OR)

The image above is a great example of what happens on a cold, calm and clear night after a snowstorm. Large snow crystals develop when the snowpack radiates energy and vapor condenses to form a pattern of distinctive flakes that glitter brightly in the sunlight. This phenomenon is called surface hoar and while it is beautiful to behold in the morning sun, a layer of hoar crystals can become an avalanche hazard when fresh snow falls on top of it, leaving a weak layer in the snowpack.

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General Outlook

January 1st, 2019

SUMMARY

Summer's dry weather patterns extended into mid-December, bringing below average amounts of fall precipitation and delaying snowpack initiation in parts of Oregon. Long-awaited December storms brought significant snow to the mountains around the solstice and most sites in eastern Oregon received well above average snowfall for the last half of the month. As of January 1st, snowpack conditions vary widely across the state. Most of eastern Oregon's mountains have near normal snowpack, but central and western parts of the state remain below normal. It is still early in the season and there is plenty of opportunity for these conditions to change significantly. While eastern Oregon currently has about-normal snowpack as of January 1st, storms must continue to bring snow and cold temperatures in order to keep it on track.

The long-range weather forecast from NOAA's Climate Prediction Center is calling for above normal temperatures and below normal precipitation for the next three months (<http://www.cpc.ncep.noaa.gov/>). Given this climate outlook, it seems unlikely that this winter will bring above normal snowpack statewide. However, these forecasts leave room for uncertainty, and storms that bring significant snow are still very possible. Additionally, the unpredictability of springtime weather could shift conditions in either direction: protracted cool and damp spring weather can help offset impacts of a low snow year, and, conversely, warm spring temperatures can contribute to a rapidly diminishing snowpack. Most of the snowpack-building months are still ahead and this year's water supply outlook will become clearer as the season progresses.

SNOWPACK

Western Oregon is starting the new year with below normal snowpack in the mountains, ranging from 61% of normal in the Willamette basin to 67% of normal in the Rogue and Umpqua basins. Snowpack conditions improve eastward across the state and the majority of eastern Oregon's mountains have near normal snowpack. The Owyhee basin has the highest percentage in the state at 116% of normal. In eastern Oregon, precipitation type played a role in the current state of the snowpack: precipitation overall was below normal, but because it mostly fell as snow, this part of the state reached normal snowpack levels for January 1st.

In western Oregon, warm temperatures contributed to rain until mid-December, delaying the onset of snowpack accumulation. The long-range weather forecast does not favor a significant recovery in snowpack in the coming months, but it is early and things can still change. Last year at this time, all basins in the state had less than a 60% of normal snowpack.

PRECIPITATION

Since the water year began on October 1st, it has been drier than usual and most of the state has received less than 90% of average precipitation amounts. Northeastern Oregon is the exception and has received near average amounts for the water year so far. The lowest amounts have fallen in the Rogue and Umpqua basins, which are collectively at 69% of average.

December precipitation was highest in the Umatilla, Walla Walla and Willow basins, which received 110% of average for the month. Several basins in the northern part of the state were near average for December precipitation: Hood, Sandy, and Lower Deschutes (103%); Grande Ronde, Powder, Burnt, and Imnaha (97%), and Willamette (95%). Elsewhere, the month was slightly drier than usual, ranging from 76% to 88% of normal for December precipitation. Most of the state's monthly precipitation fell in the last half of the month, coinciding in many places with colder temperatures, which meant that much of it fell as snow and helped parts of the state reach normal snowpack by January 1st. In western Oregon, most of the precipitation before mid-December fell as rain.

RESERVOIRS

Most of Oregon's major irrigation reservoirs are storing below average amounts of water as of the end of December. A hot, dry summer and high irrigation demand followed by a drier than usual autumn has led to lower than average carryover storage. The remaining winter months are critical for determining if reservoir storage levels will recover to normal levels by the summer irrigation season. At the end of December, combined reservoir storage in most basins is between 60% and 80% of average. The lowest reservoir storage in the state is in the Grande Ronde, Powder, Burnt and Imnaha basins at 57% of average. The Willamette basin is the exception: reservoirs are collectively 134% of average. These reservoirs are managed for a combination of flood control, recreation and water supply and are currently storing the highest amounts of water in the state.

STREAMFLOW

Most of Oregon's streams and rivers had below average streamflow in December, a continuation of the low streamflow conditions that have been observed since early summer due to hot and dry conditions. A few rivers in northeastern Oregon came close to normal December streamflow levels as a result of near average to above average monthly precipitation in the region.

Due to current staffing, the majority of the official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271, scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov). As a rough guidance, areas that currently have below normal snowpack conditions are the regions that could most likely experience below average streamflow conditions if snowpack levels do not improve this season. However, areas that currently have normal snowpack levels could also experience below average streamflow conditions if typical snow accumulation does not continue through the winter months. More detailed water supply outlook information and forecasts will be provided next month.

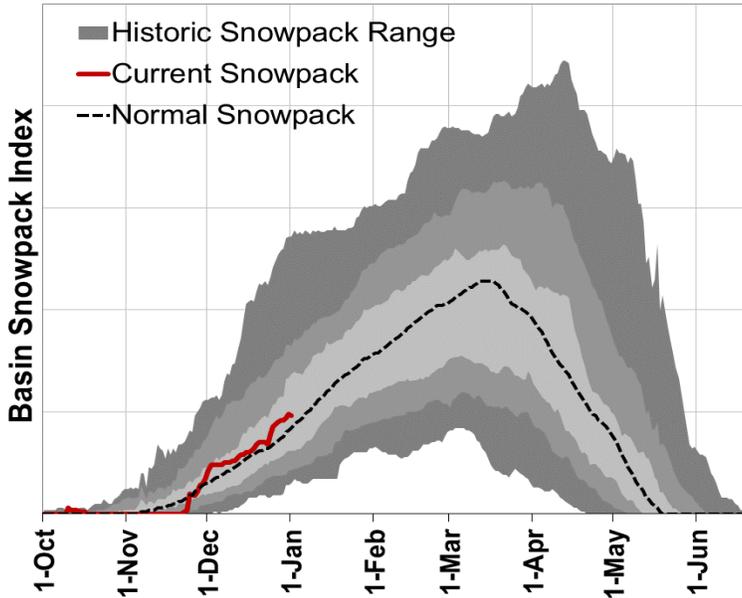
All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.



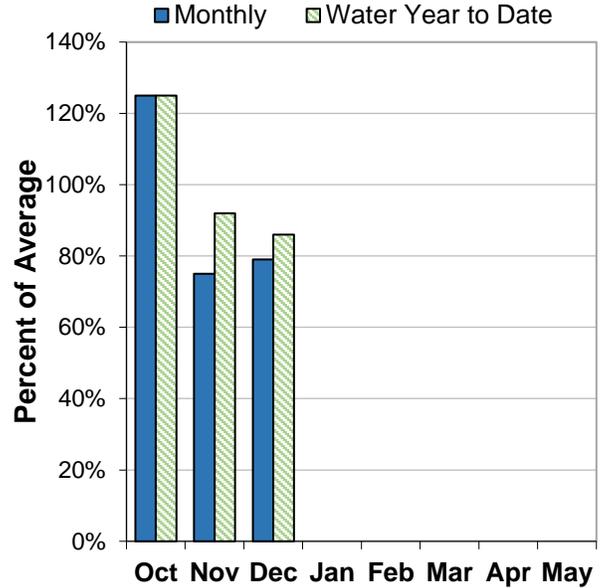
Owyhee and Malheur Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 116% of normal. This is significantly higher than last year when the basin snowpack was 42% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 79% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 86% of average.

RESERVOIR

Reservoir storage across the basin is currently below average. As of January 1, storage at major reservoirs in the basin ranges from 16% of average at Warm Springs Reservoir to 81% of average at Lake Owyhee.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the Owyhee basin range from 68% to 72% of average.

Owyhee And Malheur Basins Summary for January 1, 2019

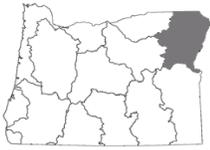
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Owyhee R nr Rome	FEB-JUL	137	285	420	72%	575	855	580
	FEB-SEP	146	300	435	73%	595	875	595
	APR-JUL	52	145	235	68%	345	550	345
	APR-SEP	61	158	250	68%	365	570	365
Owyhee R bl Owyhee Dam ²	FEB-JUL	166	325	470	74%	635	925	635
	FEB-SEP	187	355	495	74%	665	955	665
	APR-JUL	69	169	260	69%	375	580	375
	APR-SEP	89	195	290	72%	405	610	405
Malheur R nr Drewsey NF Malheur R at Beulah ²								

* 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	10.7	20.6	21.0	51%	59.2
Bully Creek	3.0	8.4	10.8	27%	23.7
Lake Owyhee	254.0	461.4	312.7	81%	715.0
Warm Springs	9.7	96.4	60.4	16%	169.6

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	2	109%	48%
South Fork Owyhee Basin	4	125%	38%
Upper Malheur Basin	3	107%	44%
Upper Owyhee Basin	5	118%	40%

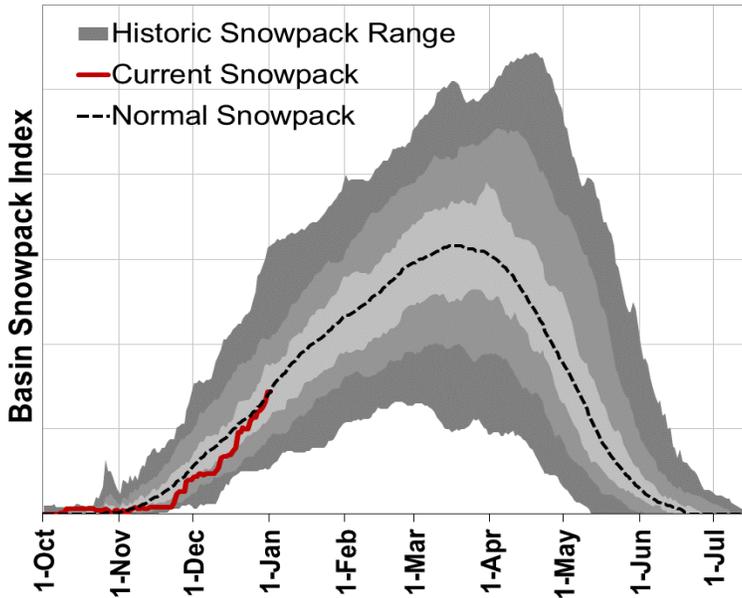
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Jan	29	6.7	3.5	7.0	96%
Trout Creek AM	7890	1-Jan	23	5.3	0.6		
Toe Jam SNOTEL	7700	1-Jan	34	7.5	3.9		
Govt Corrals AM	7400	1-Jan	23	5.3	1.2		
Jack Creek Upper SNOTEL	7250	1-Jan	35	6.2	2.2	5.4	115%
Fawn Creek SNOTEL	7000	1-Jan	32	6.3	2.0	5.9	107%
Buckskin Lower SNOTEL	6915	1-Jan	25	4.5	1.4	3.3	136%
Big Bend SNOTEL	6700	1-Jan	13	3.6	1.5	3.0	120%
Fry Canyon SNOTEL	6700	1-Jan	15	3.0	1.1		
Laurel Draw SNOTEL	6697	1-Jan	23	5.6	1.9	4.1	137%
South Mtn. SNOTEL	6500	1-Jan	22	6.0	2.0	6.2	97%
Taylor Canyon SNOTEL	6200	1-Jan	13	3.0	0.3	1.5	200%
Blue Mountain Spring SNOTEL	5870	1-Jan	30	6.9	3.1	6.9	100%
Mud Flat SNOTEL	5730	1-Jan	13	3.1	0.7	2.6	119%
Reynolds Creek SNOTEL	5600	1-Jan	13	3.0	1.8	2.0	150%
Call Meadows AM	5380	1-Jan	8	1.8			
Rock Springs SNOTEL	5290	1-Jan	12	2.6	1.0	1.9	137%
Lake Creek R.S. SNOTEL	5240	1-Jan	22	5.1	1.9	4.8	106%



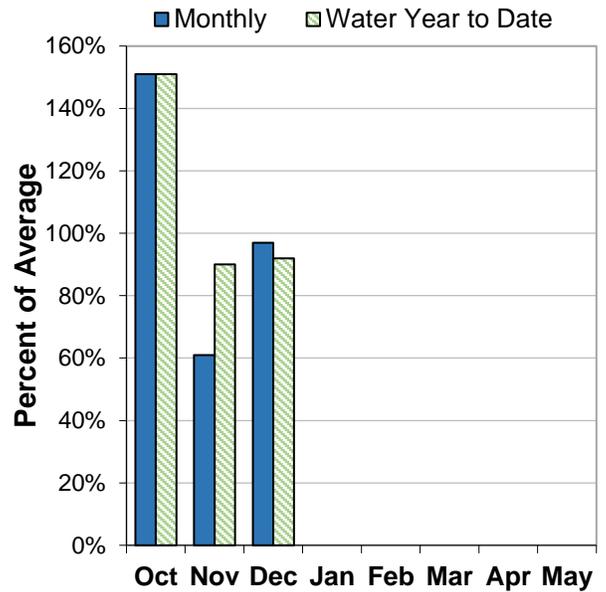
Grande Ronde, Powder, Burnt and Imnaha Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 100% of normal. This is significantly higher than last year when the basin snowpack was 55% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 97% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 92% of average.

RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 20% of average at Phillips Lake to 120% of average at Wallowa Lake.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts January 1, 2019	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 Powder R nr Sumpter ² Pine Ck nr Oxbow Imnaha R at Imnaha Catherine Ck nr Union Lostine R nr Lostine Bear Ck nr Wallowa Grande Ronde R at Troy		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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)
Phillips Lake	6.2	33.6	30.2	20%	73.5
Thief Valley	6.6	8.3	10.5	62%	13.3
Unity	6.2	9.0	9.5	65%	25.5
Wallowa Lake	17.6	25.9	14.7	120%	37.5
Wolf Creek	2.1	2.4	2.6	77%	11.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Burnt Basin	2	99%	51%
Imnaha Basin	3	78%	47%
Lower Grande Ronde Basin	3	107%	69%
Powder Basin	7	102%	44%
Upper Grande Ronde Basin	7	108%	64%
Wallowa Basin	4	89%	59%

Grande Ronde, Powder, Burnt And Innaha Basins Summary for January 1, 2019

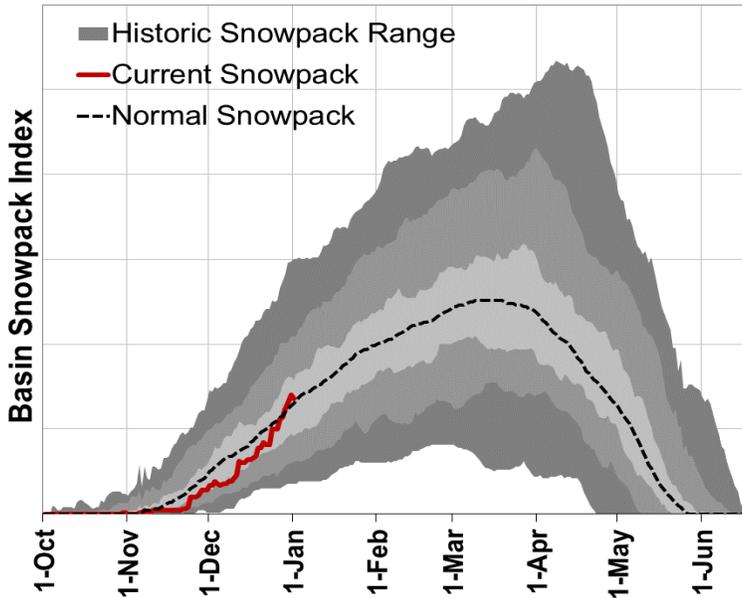
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Jan	22	5.5	4.3	7.5	73%
Aneroid Lake #2 SNOTEL	7400	1-Jan	33	6.1	3.9	9.1	67%
TV Ridge AM	7050	1-Jan	23	5.0			
Bald Mtn AM	6600	1-Jan	53	11.1			
Big Sheep AM	6230	1-Jan	28	5.9	3.4		
Bear Saddle SNOTEL	6180	1-Jan	34	8.0	3.0	9.4	85%
Bourne SNOTEL	5850	1-Jan	34	6.8	2.5	6.8	100%
Moss Springs SNOTEL	5760	1-Jan	45	10.7	8.4	10.2	105%
Taylor Green SNOTEL	5740	1-Jan	35	8.5	3.7	7.7	110%
Spruce Springs SNOTEL	5700	1-Jan	25	6.4	4.9	7.1	90%
Wolf Creek SNOTEL	5630	1-Jan	26	6.0	3.1	6.0	100%
Milk Shakes SNOTEL	5580	1-Jan	60	16.7	14.1		
West Branch SNOTEL	5560	1-Jan	38	8.1	3.7	9.2	88%
Touchet SNOTEL	5530	1-Jan	51	15.4	8.8	12.9	119%
Eilertson Meadows SNOTEL	5510	1-Jan	23	5.5	1.4	4.8	115%
West Eagle Meadows AM	5500	1-Jan	47	10.8	4.4		
Gold Center SNOTEL	5410	1-Jan	24	5.0	1.9	4.7	106%
Schneider Meadows SNOTEL	5400	1-Jan	48	11.0	5.3	12.3	89%
Beaver Reservoir SNOTEL	5150	1-Jan	23	4.4	2.5	4.2	105%
Tipton SNOTEL	5150	1-Jan	21	4.7	3.1	5.1	92%
High Ridge SNOTEL	4920	1-Jan	46	12.6	6.4	11.0	115%
County Line SNOTEL	4830	1-Jan	10	2.2	1.9	2.4	92%
Bowman Springs SNOTEL	4530	1-Jan	16	4.3	2.9	3.7	116%
Sourdough Gulch SNOTEL	4000	1-Jan	1	0.3	0.6	0.6	50%



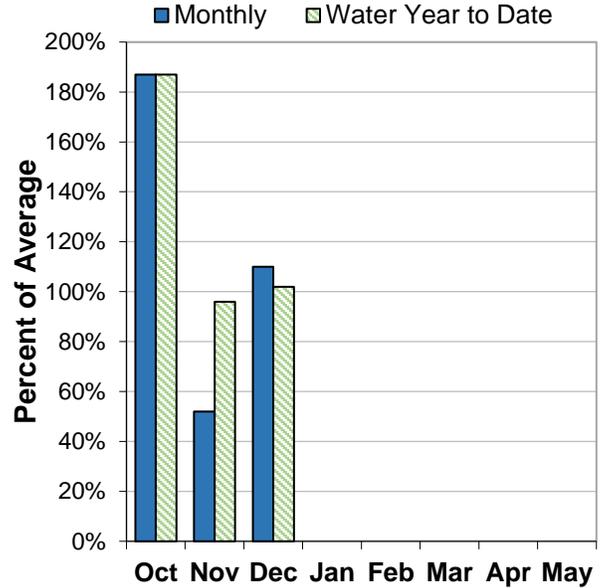
Umatilla, Walla Walla and Willow Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 106% of normal. This is significantly higher than last year when the basin snowpack was 59% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 110% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 102% of average.

RESERVOIR

Reservoir storage across the basin is currently well below average. As of January 1, storage at major reservoirs in the basin ranges from 56% of average at Willow Creek Reservoir to 89% of average at Cold Springs Reservoir.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Umatilla, Walla Walla And Willow Basins Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater Umatilla R ab Meacham nr Gibbon Umatilla R at Pendleton McKay Ck nr Pilot Rock Butter Ck nr Pine City Willow Ck ab Willow Lk nr Heppner Rhea Ck nr Heppner		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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	6.1	6.4	6.9	89%
Mckay	13.4	17.6	20.0	67%	71.5
Willow Creek	2.3	2.7	4.2	56%	9.8

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5	102%	57%
Walla Walla Basin	7	106%	59%

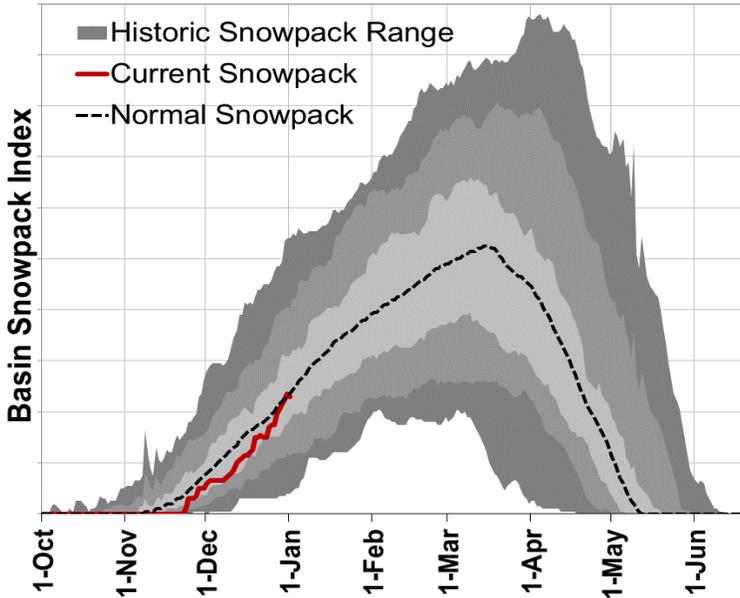
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Jan	28	6.7	3.8	8.1	83%
Spruce Springs SNOTEL	5700	1-Jan	25	6.4	4.9	7.1	90%
Milk Shakes SNOTEL	5580	1-Jan	60	16.7	14.1		
Touchet SNOTEL	5530	1-Jan	51	15.4	8.8	12.9	119%
Madison Butte SNOTEL	5150	1-Jan	12	2.4	0.9	2.7	89%
Lucky Strike SNOTEL	4970	1-Jan		4.7	1.8	3.9	121%
High Ridge SNOTEL	4920	1-Jan	46	12.6	6.4	11.0	115%
Bowman Springs SNOTEL	4530	1-Jan	16	4.3	2.9	3.7	116%
Emigrant Springs SNOTEL	3800	1-Jan	11	2.3	2.3	3.3	70%



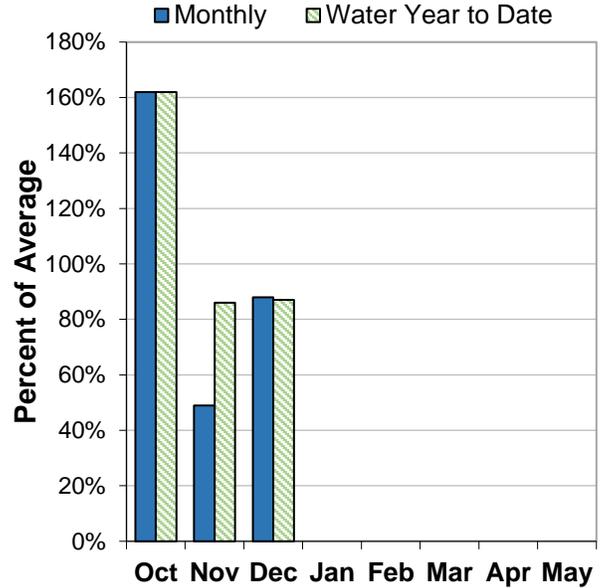
John Day Basin

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 96% of normal. This is significantly higher than last year when the basin snowpack was 42% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 88% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 87% of average.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

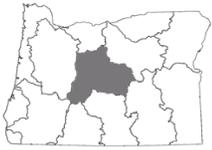
John Day Basin Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *							
Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	
Strawberry Ck nr Prairie City Mountain Ck nr Mitchell Camas Ck nr Ukiah MF John Day R at Ritter NF John Day R at Monument		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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	82%	26%
North Fork John Day Basin	7	96%	47%
Upper John Day Basin	5	101%	40%

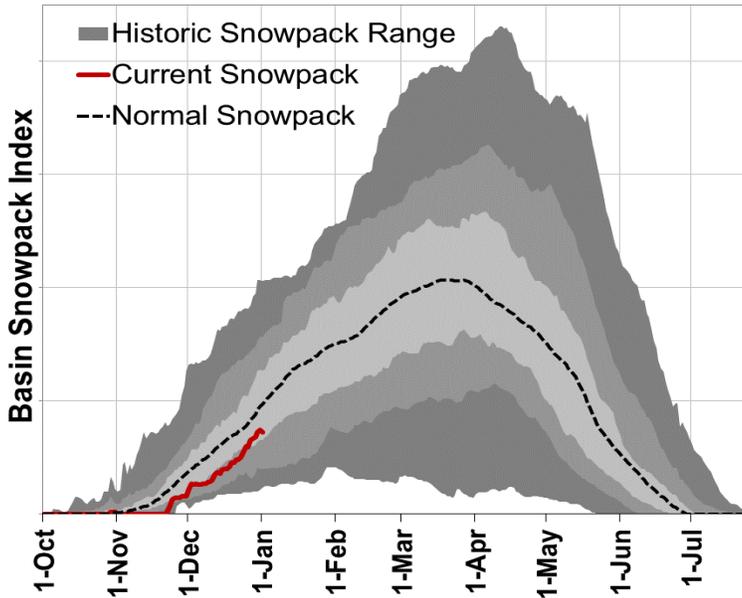
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jan	16	3.8	2.0	3.3	115%
Blue Mountain Spring SNOTEL	5870	1-Jan	30	6.9	3.1	6.9	100%
Bourne SNOTEL	5850	1-Jan	34	6.8	2.5	6.8	100%
Derr. SNOTEL	5850	1-Jan	20	4.9	1.2	5.7	86%
Arbuckle Mtn SNOTEL	5770	1-Jan	28	6.7	3.8	8.1	83%
Ochoco Meadows SNOTEL	5430	1-Jan	17	4.4	1.6	4.4	100%
Gold Center SNOTEL	5410	1-Jan	24	5.0	1.9	4.7	106%
Starr Ridge SNOTEL	5250	1-Jan	15	3.1	1.3	2.8	111%
Lake Creek R.S. SNOTEL	5240	1-Jan	22	5.1	1.9	4.8	106%
Madison Butte SNOTEL	5150	1-Jan	12	2.4	0.9	2.7	89%
Tipton SNOTEL	5150	1-Jan	21	4.7	3.1	5.1	92%
Lucky Strike SNOTEL	4970	1-Jan		4.7	1.8	3.9	121%
County Line SNOTEL	4830	1-Jan	10	2.2	1.9	2.4	92%
Marks Creek Snow Course	4580	28-Dec	4	0.7	0.2	2.4	29%



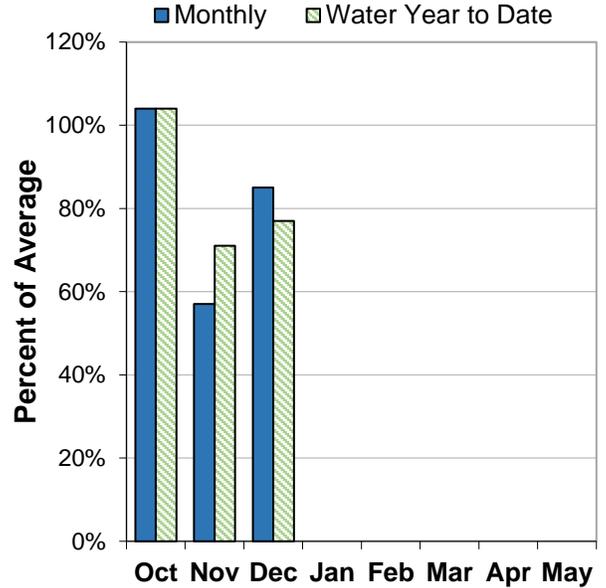
Upper Deschutes and Crooked Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 72% of normal. This is higher than last year when the basin snowpack was 43% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 85% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 77% of average.

RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 33% of average at Ochoco Reservoir to 134% of average at Crescent Lake.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Upper Deschutes And Crooked Basins Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *

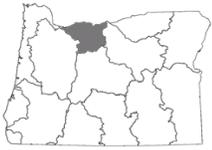
Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	
Deschutes R bl Snow Ck Crane Prairie Reservoir Inflow ² Crescent Lake Inflow ² Little Deschutes R nr La Pine ² Deschutes R at Benham Falls ² Wychus Ck nr Sisters Prineville Reservoir Inflow ² Ochoco Reservoir Inflow ²		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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)
Crane Prairie	36.9	40.7	35.6	104%	55.3
Crescent Lake	59.0	76.9	44.0	134%	86.9
Ochoco	5.7	19.3	17.1	33%	44.2
Prineville	52.6	81.5	82.6	64%	148.6
Wickiup	82.8	154.9	140.8	59%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	71%	53%
Upper Crooked Basin	3	80%	24%
Upper Deschutes Basin	11	74%	42%

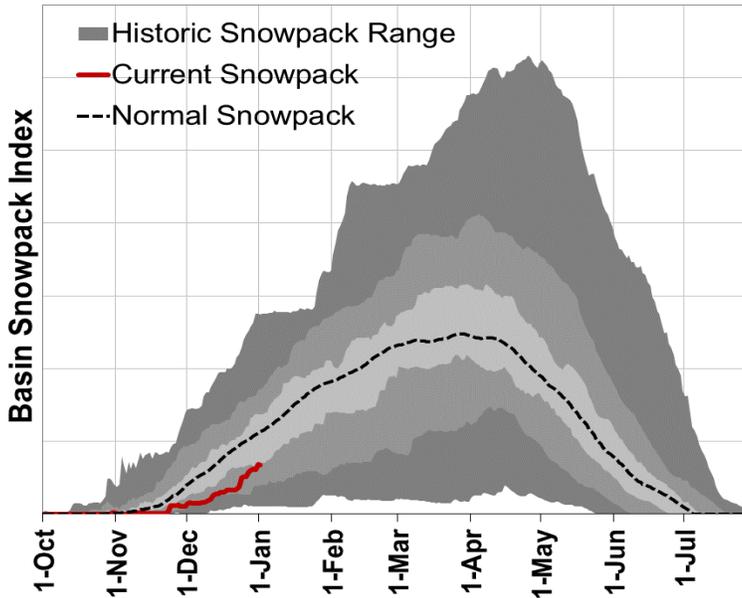
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jan	16	3.8	2.0	3.3	115%
Derr. SNOTEL	5850	1-Jan	20	4.9	1.2	5.7	86%
Three Creeks Meadow SNOTEL	5690	1-Jan	22	6.4	1.5	6.9	93%
Summit Lake SNOTEL	5610	1-Jan	39	11.9	11.2	16.3	73%
Bald Peter Snow Course	5600	4-Jan	38	12.6	1.0	10.8	117%
Irish Taylor SNOTEL	5540	1-Jan	42	11.9	8.5	14.6	82%
Ochoco Meadows SNOTEL	5430	1-Jan	17	4.4	1.6	4.4	100%
Racing Creek Snow Course	5160	4-Jan	14	3.8	0.0	6.0	63%
Cascade Summit SNOTEL	5100	1-Jan	37	11.0	8.9	14.1	78%
Roaring River SNOTEL	4950	1-Jan	27	8.2	4.9	12.6	65%
New Crescent Lake SNOTEL	4910	1-Jan	12	3.4	1.1	6.1	56%
Chemult Alternate SNOTEL	4850	1-Jan	10	2.9	0.4	4.6	63%
Hogg Pass SNOTEL	4790	1-Jan	30	10.1	3.4	11.6	87%
McKenzie SNOTEL	4770	1-Jan	34	13.7	8.9	18.5	74%
Marks Creek Snow Course	4580	28-Dec	4	0.7	0.2	2.4	29%
Salt Creek Falls SNOTEL	4220	1-Jan	18	5.9	3.2	8.6	69%
Santiam Jct. SNOTEL	3740	1-Jan	9	2.9	2.8	9.0	32%



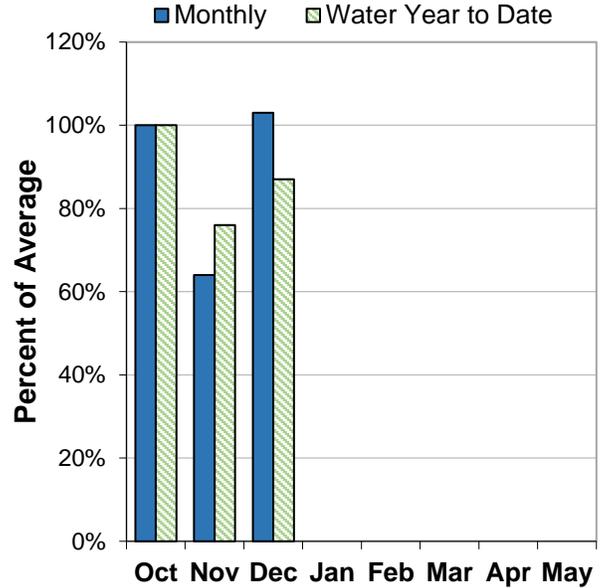
Hood, Sandy and Lower Deschutes Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 63% of normal. This is higher than last year when the basin snowpack was 56% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 103% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 87% of average.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Hood, Sandy And Lower Deschutes Basins Summary for January 1, 2019

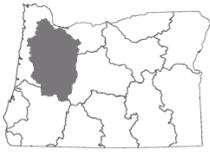
Forecast Exceedance Probabilities for Risk Assessment *							
Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	
WF Hood R nr Dee Hood R at Tucker Bridge Sandy R nr Marmot		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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	2.4	2.8	35%	13.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	63%	61%
Lower Deschutes Basin	9	72%	37%
Middle Columbia - Hood Basin	8	65%	59%

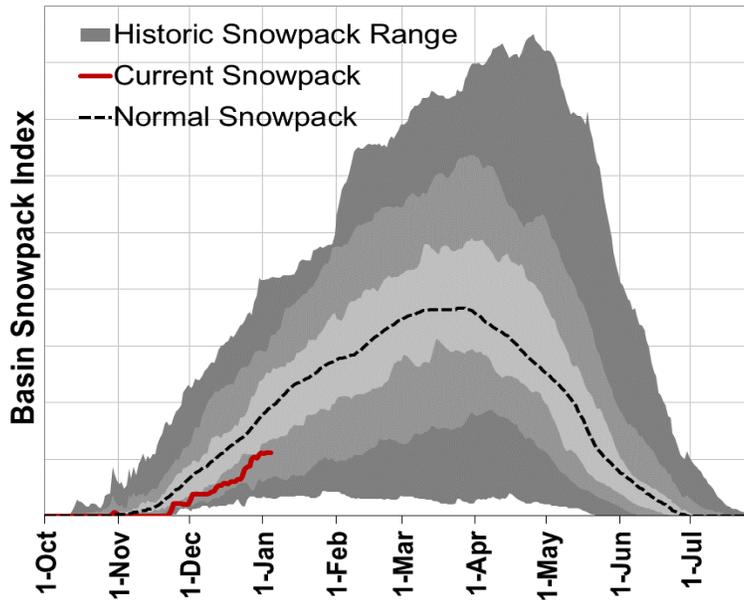
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
High Prairie Snow Course	6080	31-Dec	48	13.4	5.9	16.4	82%
Bald Peter Snow Course	5600	4-Jan	38	12.6	1.0	10.8	117%
Mt Hood Test Site SNOTEL	5370	1-Jan	63	18.3	13.4	25.3	72%
Racing Creek Snow Course	5160	4-Jan	14	3.8	0.0	6.0	63%
Red Hill SNOTEL	4410	1-Jan	34	12.4	12.3	18.7	66%
Mill Creek Meadow Snow Course	4400	31-Dec	21	4.8	1.8	6.4	75%
Surprise Lakes SNOTEL	4290	1-Jan	47	14.3	18.5	19.9	72%
Beaver Creek #2 Snow Course	4220	2-Jan	7	1.8	1.2	4.6	39%
Beaver Creek #1 Snow Course	4210	2-Jan	13	3.6	2.0	5.9	61%
Mud Ridge SNOTEL	4070	1-Jan	31	6.7	6.3	11.0	61%
Clear Lake SNOTEL	3810	1-Jan	14	3.2	1.3	6.3	51%
Blazed Alder SNOTEL	3650	1-Jan	26	8.2	9.9	12.3	67%
Clackamas Lake SNOTEL	3400	1-Jan	8	2.5	3.2	5.4	46%
Greenpoint SNOTEL	3310	1-Jan	7	2.3	1.4	9.2	25%
North Fork SNOTEL	3060	1-Jan	5	1.6	4.8	6.8	24%
South Fork Bull Run SNOTEL	2690	1-Jan	2	0.7	1.3	0.5	140%



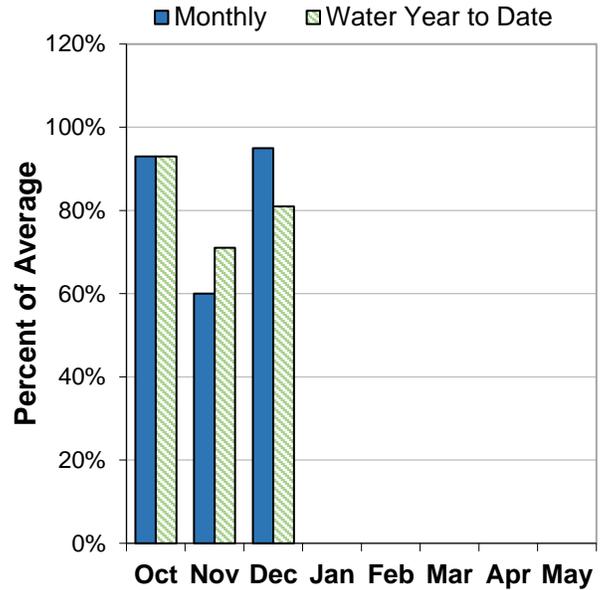
Willamette Basin

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 61% of normal. This is higher than last year when the basin snowpack was 44% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 95% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 81% of average.

RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 56% of average at Dorena Reservoir to 197% of average at Blue River Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 86% to 93% of average.

Willamette Basin Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2019	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	112	195	230	94%	270	355	245
	APR-SEP	170	250	290	92%	325	410	315
Lookout Point Reservoir Inflow ^{1,2}	APR-JUN	455	545	585	90%	625	715	650
	APR-SEP	445	665	765	93%	865	1080	825
McKenzie R bl Trail Bridge	APR-JUN	139	177	196	93%	215	265	210
	APR-SEP	240	290	315	91%	340	405	345
Cougar Lake Inflow ^{1,2}	APR-JUN	86	139	163	88%	187	240	185
	APR-SEP	136	186	210	89%	230	280	235
Blue Lake Inflow ^{1,2}	APR-JUN	12.8	35	73	91%	125	167	80
	APR-SEP	39	64	76	88%	88	113	86
McKenzie R nr Vida ^{1,2}	APR-JUN	715	745	760	92%	775	805	830
	APR-SEP	765	985	1090	92%	1180	1400	1190
Detroit Lake Inflow ^{1,2}	APR-JUN	189	345	415	88%	485	640	470
	APR-SEP	315	460	525	86%	590	735	610
North Santiam R at Mehama ^{1,2}	APR-JUN	320	510	595	89%	675	865	665
	APR-SEP	465	640	720	86%	795	970	840
Green Peter Lake Inflow ^{1,2}	APR-JUN	220	235	245	92%	255	275	265
	APR-SEP	142	225	265	90%	310	430	295
Foster Lake Inflow ^{1,2}	APR-JUN	235	380	460	92%	545	765	500
	APR-SEP	275	425	505	89%	595	810	565
South Santiam R at Waterloo ²	APR-JUN	415	460	480	91%	500	550	525
	APR-SEP	285	450	535	91%	630	860	590
Willamette R at Salem ^{1,2}	APR-JUN	2910	3370	3590	91%	3820	4360	3950
	APR-SEP	2670	3750	4300	91%	4880	6300	4730
Oak Grove Fk ab Powerplant	APR-JUL	76	96	110	96%	123	143	115
	APR-SEP	102	126	142	92%	159	182	155
Clackamas R ab Three Lynx	APR-JUL	270	350	405	90%	460	540	450
	APR-SEP	345	430	490	92%	545	630	535
Clackamas R at Estacada	APR-JUL	355	470	550	88%	625	740	625
	APR-SEP	450	570	655	90%	735	855	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 January 1, 2019

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	18.9	8.5	9.6	197%	82.3
Cottage Grove	4.1	3.8	4.8	86%	31.8
Cougar	88.7	41.2	53.5	166%	174.9
Detroit	284.5	154.9	174.7	163%	426.8
Dorena	7.8	9.5	13.9	56%	72.1
Fall Creek	4.2	6.8	15.0	28%	116.0
Fern Ridge	23.5	4.6	14.4	163%	97.3
Foster	28.0	23.6	22.3	125%	46.2
Green Peter	263.4	179.5	182.3	144%	402.8
Hills Creek	131.4	83.0	104.8	125%	279.2
Lookout Point	171.2	110.0	144.2	119%	433.2
Timothy Lake	55.4	57.5	50.3	110%	63.6
Henry Hagg Lake	22.5	35.8	31.9	71%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	11	63%	52%
McKenzie Basin	14	72%	44%
Middle Fork Willamette Basin	7	71%	49%
North Santiam Basin	4	38%	36%
South Santiam Basin	4	39%	34%

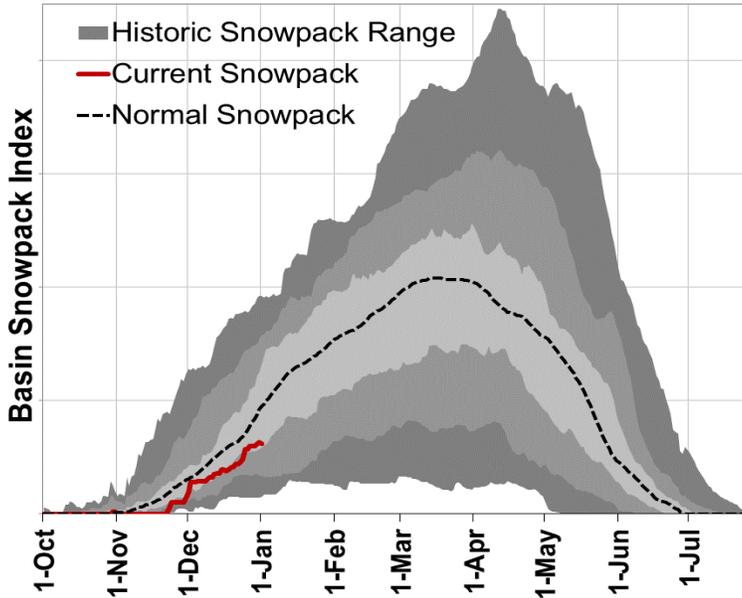
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Jan	39	11.9	11.2	16.3	73%
Irish Taylor SNOTEL	5540	1-Jan	42	11.9	8.5	14.6	82%
Cascade Summit SNOTEL	5100	1-Jan	37	11.0	8.9	14.1	78%
Roaring River SNOTEL	4950	1-Jan	27	8.2	4.9	12.6	65%
Holland Meadows SNOTEL	4930	1-Jan	17	5.8	0.7	10.8	54%
McKenzie SNOTEL	4770	1-Jan	34	13.7	8.9	18.5	74%
Bear Grass SNOTEL	4720	1-Jan	43	15.4	12.0		
Beaver Creek #2 Snow Course	4220	2-Jan	7	1.8	1.2	4.6	39%
Salt Creek Falls SNOTEL	4220	1-Jan	18	5.9	3.2	8.6	69%
Beaver Creek #1 Snow Course	4210	2-Jan	13	3.6	2.0	5.9	61%
Mud Ridge SNOTEL	4070	1-Jan	31	6.7	6.3	11.0	61%
Little Meadows SNOTEL	4020	1-Jan	18	6.1	5.7	10.8	56%
Clear Lake SNOTEL	3810	1-Jan	14	3.2	1.3	6.3	51%
Santiam Jct. SNOTEL	3740	1-Jan	9	2.9	2.8	9.0	32%
Daly Lake SNOTEL	3690	1-Jan	5	1.8	0.9	6.8	26%
Jump Off Joe SNOTEL	3520	1-Jan	5	1.6	0.9	5.2	31%
Peavine Ridge SNOTEL	3420	1-Jan	7	3.0	2.9	6.3	48%
Clackamas Lake SNOTEL	3400	1-Jan	8	2.5	3.2	5.4	46%
Smith Ridge SNOTEL	3270	1-Jan	1	0.2	0.4		
Saddle Mountain SNOTEL	3110	1-Jan	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Jan	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Jan	2	0.8	1.5	3.8	21%
Seine Creek SNOTEL	2060	1-Jan	0	0.0	0.0	0.0	
Miller Woods SNOTEL	420	1-Jan	0	0.0	0.0		



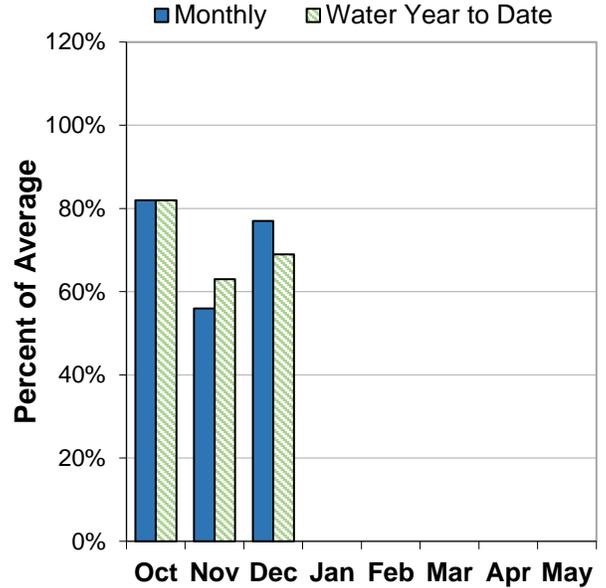
Rogue and Umpqua Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 67% of normal. This is higher than last year when the basin snowpack was 44% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 77% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 69% of average.

RESERVOIR

Reservoir storage across the basin is currently below average. As of January 1, storage at major reservoirs in the basin ranges from 11% of average at Hyatt Prairie Reservoir to 86% of average at Lost Creek Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the Rogue basin range from 62% to 91% of average.

Rogue And Umpqua Basins Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2019	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								
Cow Ck ab Galesville Reservoir								
South Umpqua R nr Brockway								
North Umpqua R at Winchester								
Lost Creek Lk Inflow ²	FEB-JUL	505	605	670	84%	740	835	795
	FEB-SEP	610	715	785	85%	860	965	920
	APR-JUL	285	355	405	78%	455	530	520
	APR-SEP	380	460	520	81%	575	655	645
Rogue R at Raygold ²	APR-JUL	365	500	590	87%	685	820	675
	APR-SEP	475	625	730	91%	830	980	805
Rogue R at Grants Pass ²	APR-JUL	345	495	595	82%	695	845	725
	APR-SEP	450	610	720	85%	825	985	845
Applegate Lake Inflow ²								
Sucker Ck bl Ltl Grayback nr Holland								
Illinois R nr Kerby	APR-JUL	37	85	117	62%	149	196	188
	APR-SEP	43	91	123	64%	156	205	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	Useable Capacity				
	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	(KAF)
Applegate	8.6	3.8	10.2	84%	75.2
Emigrant Lake	7.6	13.8	17.2	44%	39.0
Fish Lake	3.1	5.4	4.7	66%	7.9
Fourmile Lake	2.4	5.7	6.7	35%	15.6
Howard Prairie	18.7	42.1	35.5	53%	62.1
Hyatt Prairie	1.1	7.0	9.6	11%	16.2
Lost Creek	117.8	128.7	137.6	86%	315.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	2	40%	17%
Middle Rogue Basin	3	24%	0%
North Umpqua Basin	6	68%	47%
South Umpqua Basin	8	41%	20%
Upper Rogue Basin	11	73%	48%

Rogue And Umpqua Basins Summary for January 1, 2019

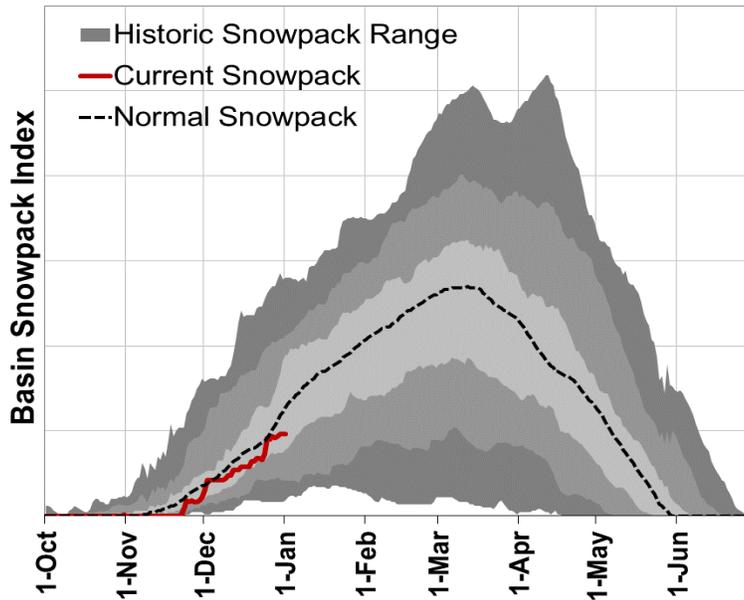
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Park H.Q. Rev Snow Course	6570	2-Jan	60	19.3	16.1	20.6	94%
Big Red Mountain SNOTEL	6050	1-Jan	19	5.4	2.2	10.0	54%
Annie Springs SNOTEL	6010	1-Jan	40	11.3	9.9	17.3	65%
Fourmile Lake SNOTEL	5970	1-Jan	34	9.6	3.6	13.4	72%
Cold Springs Camp SNOTEL	5940	1-Jan	24	8.0	4.4	14.0	57%
Sevenmile Marsh SNOTEL	5700	1-Jan	30	9.0	6.9	12.5	72%
Summit Lake SNOTEL	5610	1-Jan	39	11.9	11.2	16.3	73%
Billie Creek Divide SNOTEL	5280	1-Jan	26	8.1	4.1	10.4	78%
Diamond Lake SNOTEL	5280	1-Jan	18	5.7	1.3	6.6	86%
Bigelow Camp SNOTEL	5130	1-Jan	2	0.7	0.3	5.1	14%
Beaver Dam Creek Snow Course	5120	2-Jan	12	3.3	2.2	6.3	52%
King Mountain 1 Snow Course	4760	31-Dec	6	0.2	0.0	2.2	9%
Deadwood Junction Snow Course	4660	2-Jan	12	4.7	2.3	4.2	112%
Fish Lk. SNOTEL	4660	1-Jan	14	4.2	2.3	5.1	82%
Howard Prairie SNOTEL	4580	1-Jan	7	2.1	0.7		
Howard Prairie Snow Course	4580	2-Jan	5	1.4	0.2	3.1	45%
Siskiyou Summit Rev. 2 Snow Course	4560	31-Dec	5	1.4	0.6	2.2	64%
Red Butte 1 Snow Course	4460	28-Dec	10	2.5	1.2	4.6	54%
King Mountain SNOTEL	4340	1-Jan	2	0.7	0.0	1.5	47%
Red Butte 2 Snow Course	4050	28-Dec	1	0.2	0.0	1.1	18%
Silver Burn Snow Course	3680	2-Jan	9	2.9	1.5	5.3	55%
Toketee Airstrip SNOTEL	3240	1-Jan	0	0.0	0.5	1.3	0%
King Mountain 4 Snow Course	3050	31-Dec	0	0.0	0.0	0.0	
Red Butte 4 Snow Course	3000	28-Dec	0	0.0	0.0	0.0	



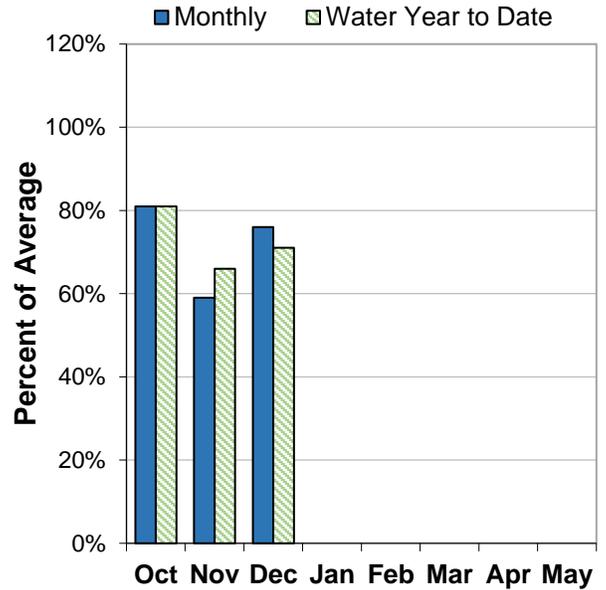
Klamath Basin

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 74% of normal. This is significantly higher than last year when the basin snowpack was 43% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 76% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 71% of average.

RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 79% of average at Clear Lake to 125% of average at Gerber Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 44% to 77% of average.

Klamath Basin Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2019	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	JAN-JUL	5.0	16.1	27	57%	41	67	47
	APR-SEP	0.01	2.4	6.4	44%	12.3	25	14.4
Sprague R nr Chiloquin	JAN-JUL	104	171	225	68%	290	395	330
	JAN-SEP	118	188	245	69%	310	420	355
	APR-JUL	51	90	124	66%	163	230	188
	APR-SEP	65	108	144	69%	185	255	210
Williamson R bl Sprague nr Chiloquin	JAN-JUL	235	320	410	77%	495	625	535
	JAN-SEP	280	375	465	78%	555	690	595
	APR-JUL	112	168	225	76%	280	360	295
	APR-SEP	157	220	275	77%	335	420	355
Upper Klamath Lake Inflow ^{1,2}	JAN-JUL	340	525	665	77%	800	1100	860
	JAN-SEP	385	585	730	78%	875	1200	940
	APR-JUL	118	220	300	75%	375	545	400
	APR-SEP	162	275	360	75%	445	630	480

* 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	149.1	200.5	187.7	79%	513.3
Gerber	49.4	58.4	39.6	125%	94.3
Upper Klamath Lake	229.2	266.9	275.4	83%	523.7

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lost Basin	3	66%	4%
Sprague Basin	4	81%	33%
Upper Klamath Lake Basin	8	73%	50%
Williamson River Basin	5	77%	54%

Klamath Basin Summary for January 1, 2019

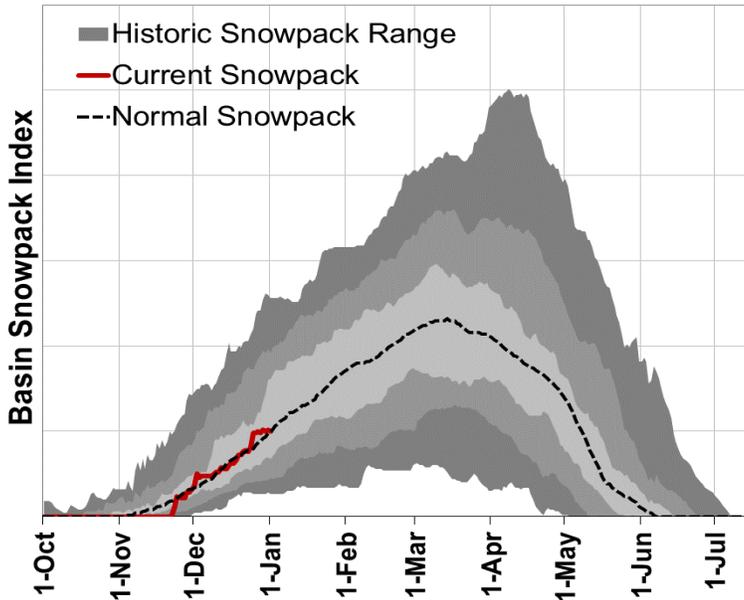
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jan	21	6.7	2.6	7.2	93%
Swan Lake Mtn SNOTEL	6830	1-Jan	28	7.9	2.7		
Park H.Q. Rev Snow Course	6570	2-Jan	60	19.3	16.1	20.6	94%
Crazyman Flat SNOTEL	6180	1-Jan	22	7.1	3.1	8.4	85%
Annie Springs SNOTEL	6010	1-Jan	40	11.3	9.9	17.3	65%
Finley Corrals AM	6000	1-Jan	31	9.9	3.0		
Fourmile Lake SNOTEL	5970	1-Jan	34	9.6	3.6	13.4	72%
Cold Springs Camp SNOTEL	5940	1-Jan	24	8.0	4.4	14.0	57%
Strawberry SNOTEL	5770	1-Jan	5	1.6	0.2	2.2	73%
Cox Flat AM	5750	1-Jan	9	2.9	0.6		
Silver Creek SNOTEL	5740	1-Jan	14	3.8	1.3	4.0	95%
Quartz Mountain SNOTEL	5720	1-Jan	6	1.9	0.0	0.9	211%
Sevenmile Marsh SNOTEL	5700	1-Jan	30	9.0	6.9	12.5	72%
State Line SNOTEL	5680	1-Jan	11	2.9	0.1		
Sun Pass SNOTEL	5400	1-Jan		6.4	1.2		
Billie Creek Divide SNOTEL	5280	1-Jan	26	8.1	4.1	10.4	78%
Diamond Lake SNOTEL	5280	1-Jan	18	5.7	1.3	6.6	86%
Crowder Flat SNOTEL	5170	1-Jan	3	0.9	0.0	1.6	56%
Beaver Dam Creek Snow Course	5120	2-Jan	12	3.3	2.2	6.3	52%
Taylor Butte SNOTEL	5030	1-Jan	4	1.3	0.7	3.6	36%
Gerber Reservoir SNOTEL	4890	1-Jan	4	0.8	0.0	1.2	67%
Chemult Alternate SNOTEL	4850	1-Jan	10	2.9	0.4	4.6	63%
Deadwood Junction Snow Course	4660	2-Jan	12	4.7	2.3	4.2	112%
Fish Lk. SNOTEL	4660	1-Jan	14	4.2	2.3	5.1	82%
Howard Prairie SNOTEL	4580	1-Jan	7	2.1	0.7		
Howard Prairie Snow Course	4580	2-Jan	5	1.4	0.2	3.1	45%
Siskiyou Summit Rev. 2 Snow Course	4560	31-Dec	5	1.4	0.6	2.2	64%



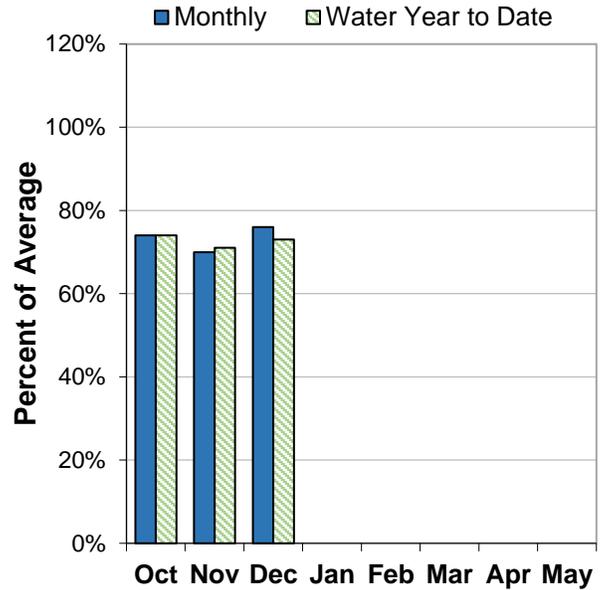
Lake County and Goose Lake Basins

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 99% of normal. This is significantly higher than last year when the basin snowpack was 43% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 76% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 73% of average.

RESERVOIR

Reservoir storage across the basin is currently below average. As of January 1, storage at major reservoirs in the basin ranges from 9% of average at Cottonwood Reservoir to 80% of average at Drews Reservoir.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Lake County And Goose Lake Basins Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	
Twentymile Ck nr Adel Deep Ck ab Adel Honey Ck nr Plush Chewaucan R nr Paisley		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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)
Cottonwood	0.3	1.4	3.3	9%	9.3
Drews	20.6	32.4	25.6	80%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	2	109%	63%
Lake Abert Basin	1	93%	36%
Summer Lake Basin	8	99%	43%
Upper Pit Basin	3	98%	30%

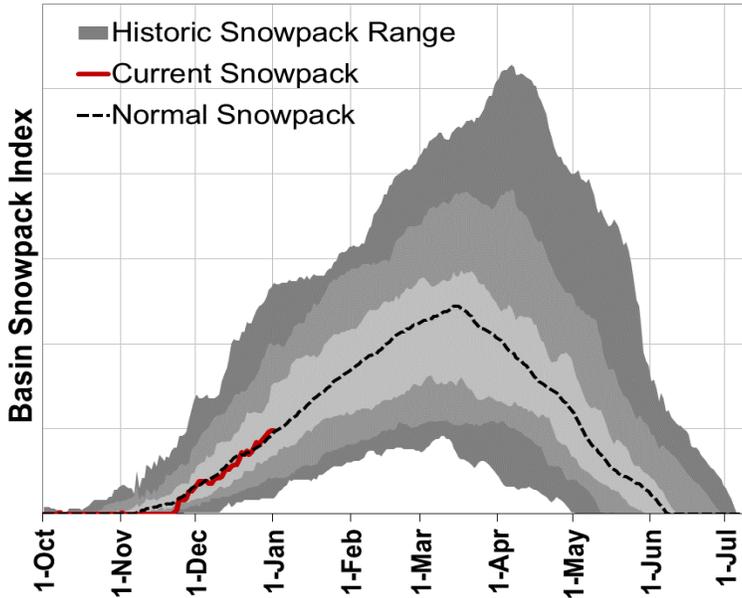
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Dismal Swamp SNOTEL	7360	1-Jan	35	10.9	7.0	9.3	117%
Summer Rim SNOTEL	7080	1-Jan	21	6.7	2.6	7.2	93%
Cedar Pass SNOTEL	7030	1-Jan	24	7.0	2.7	6.5	108%
Patton Meadows AM	6800	1-Jan	26	8.3	0.6		
Sherman Valley AM	6640	1-Jan	18	5.4	1.5		
Bear Flat Meadow AM	6580	1-Jan	17	5.4			
Hart Mountain AM	6430	1-Jan	6	1.6	0.9		
Rogger Meadow AM	6360	1-Jan	27	7.8	1.8		
Adin Mtn SNOTEL	6190	1-Jan	17	4.7	1.2	4.7	100%
Crazyman Flat SNOTEL	6180	1-Jan	22	7.1	3.1	8.4	85%
Finley Corrals AM	6000	1-Jan	31	9.9	3.0		
Sheldon SCAN	5860	1-Jan	3	0.7	0.0	0.0	
Strawberry SNOTEL	5770	1-Jan	5	1.6	0.2	2.2	73%
Cox Flat AM	5750	1-Jan	9	2.9	0.6		
Silver Creek SNOTEL	5740	1-Jan	14	3.8	1.3	4.0	95%
State Line SNOTEL	5680	1-Jan	11	2.9	0.1		
Crowder Flat SNOTEL	5170	1-Jan	3	0.9	0.0	1.6	56%



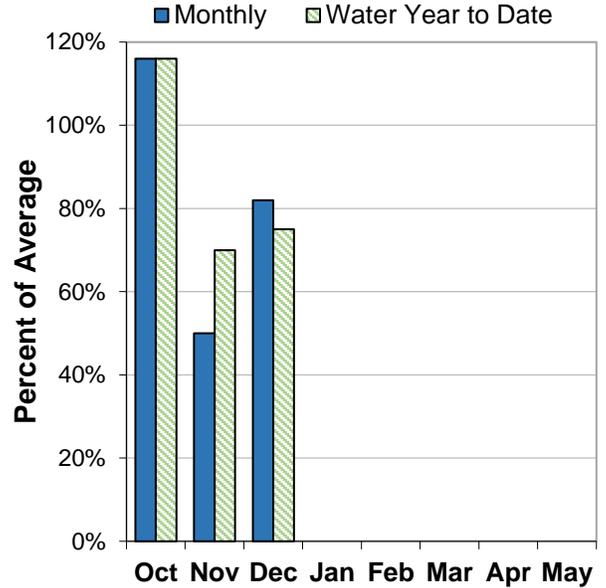
Harney Basin

January 1, 2019

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of January 1, the basin snowpack was 100% of normal. This is significantly higher than last year when the basin snowpack was 47% of normal on January 1, 2018.

PRECIPITATION

December precipitation was 82% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 75% of average.

STREAMFLOW FORECAST

Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).

Harney Basin Summary for January 1, 2019

Forecast Exceedance Probabilities for Risk Assessment *							
Streamflow Forecasts January 1, 2019	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	
Silvies R nr Burns Donner Und Blitzen R nr Frenchglen Trout Ck nr Denio		Due to current staffing, the majority of official streamflow forecasts will only be available February through May. If you rely on the January or June forecasts, please contact Scott Oviatt (503-414-3271 or scott.oviatt@usda.gov) and Cara McCarthy (cara.s.mccarthy@por.usda.gov).					

* 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	1	79%	51%
Donner und Blitzen River Basin	2	85%	47%
Silvies River Basin	4	114%	48%
Upper Quinn Basin	3	105%	38%

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-Jan	29	6.7	3.5	7.0	96%
Trout Creek AM	7890	1-Jan	23	5.3	0.6		
Fish Creek SNOTEL	7660	1-Jan	36	8.3	5.4	10.5	79%
Govt Corrals AM	7400	1-Jan	23	5.3	1.2		
Silvies SNOTEL	6990	1-Jan	23	5.1	2.0	5.3	96%
Buckskin Lower SNOTEL	6915	1-Jan	25	4.5	1.4	3.3	136%
V Lake AM	6600	1-Jan	11	2.5	0.0		
Disaster Peak SNOTEL	6500	1-Jan	16	3.7	0.0	2.6	142%
Hart Mountain AM	6430	1-Jan	6	1.6	0.9		
Snow Mountain SNOTEL	6230	1-Jan	16	3.8	2.0	3.3	115%
Lamance Creek SNOTEL	6000	1-Jan	14	3.4	0.4	3.6	94%
Blue Mountain Spring SNOTEL	5870	1-Jan	30	6.9	3.1	6.9	100%
Sheldon SCAN	5860	1-Jan	3	0.7	0.0	0.0	
Call Meadows AM	5380	1-Jan	8	1.8			
Rock Springs SNOTEL	5290	1-Jan	12	2.6	1.0	1.9	137%
Starr Ridge SNOTEL	5250	1-Jan	15	3.1	1.3	2.8	111%
Lake Creek R.S. SNOTEL	5240	1-Jan	22	5.1	1.9	4.8	106%
Buckskin Lake AM	5190	1-Jan	2	0.5			

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.

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.

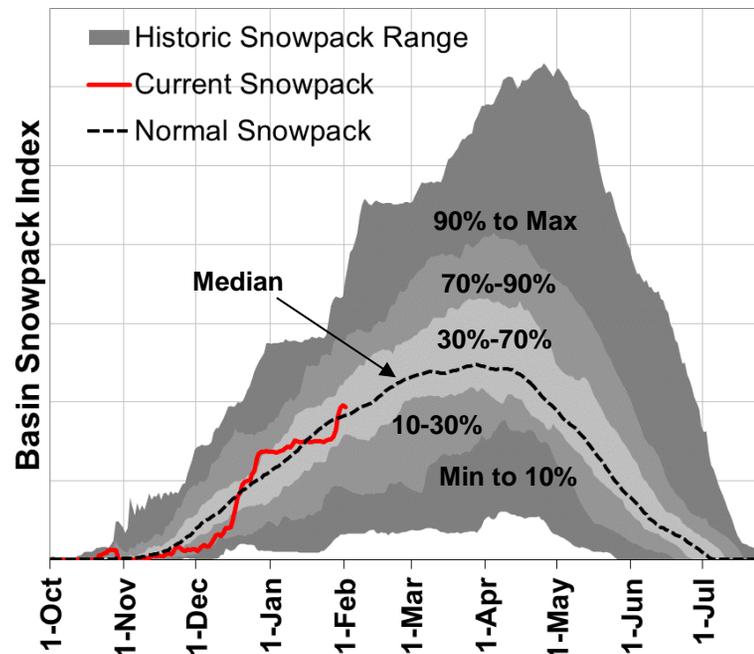
Interpreting Snowpack Plots

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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Portland, OR 97232-1274

Official Business



This publication may be found online at:
<http://www.or.nrcs.usda.gov/snow>

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