



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

June 1, 2017



The Wild and Scenic section of the Rogue River near Rainie Falls
Photo courtesy of Lauren Austin (Hydrologist, NRCS Snow Surveys, Portland, OR)

Abundant snowpack in the Rogue basin this year has contributed to above normal streamflow. Gauges along the Rogue River reported volumes between 167% and 209% of normal in the last four months. Flows for the remainder of the growing season (June-September) are forecast to be above average to well above average. Water year 2017 brought plentiful snowpack around the state, which is now reflected in the swiftly flowing rivers, healthy reservoir storage, and optimistic streamflow forecasts throughout Oregon for this summer.

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General Outlook

June 1st, 2017

SUMMARY

May brought the first month of below normal precipitation since November, but there has still been a surplus of precipitation for the water year throughout Oregon. In the eight months since the water year began on October 1st, most SNOTEL sites have already exceeded their normal amount of precipitation received for an entire year. The drier than normal month of May did not affect the positive summer water supply outlook. The state-wide snowpack maintained well above normal amounts this year, resulting in one of the best snow seasons in several years. The remaining June 1st snowpack is confined to the highest elevations but continues to be above normal for this time of year. Most major irrigation reservoirs are storing average to above average amounts of water as of the end of May and summer streamflow forecasts are calling for average to above average streamflows. Additionally, the drought monitor shows no drought in Oregon for the first time since 2011: <http://droughtmonitor.unl.edu/>.

Given what we know at the moment about the precipitation and snowpack conditions, along with reservoir storage, streamflow forecasts and guidance from the drought monitor, water supplies should be adequate for the summer season for most water users. This summer's water supplies are expected to be an improvement from the last several years of drought conditions in Oregon.

SNOWPACK

Oregon's mountains maintained a well above normal snowpack throughout the winter, achieving snowpack peak levels ranging from 100% to 170% of normal prior to snowmelt season. Over the last few years, low elevation snowpacks have been meager but this year even the lowest snow measuring sites reached above normal amounts at the peak. There were significant rounds of rapid snowmelt this spring, but the surplus of snow at the peak of the season compensated for the losses.

As of June 1st, 21 Oregon SNOTEL sites have snow with most of those sites holding onto above normal amounts. Most of the snow below 5000 feet in elevation has melted, which is normal for this time of year, but some lower elevation sites in northwestern Oregon still have snow. Of the sites that are currently snow-free in the state, most of them melted out on time or later than usual, up to 3 weeks later than normal in some cases. The above normal statewide snowpack at the peak of the season combined with above normal high elevation snow on June 1st uphold an optimistic outlook for normal to above normal summer streamflows.

PRECIPITATION

The month of May was the first month this calendar year to bring drier than normal conditions to most of the state. The lighter precipitation month had little impact on the impressive water year totals. Precipitation has been well above average for the water year throughout Oregon as persistent storm systems brought sometimes heavy precipitation and piled up the snow in the mountains. As of the end of May, most SNOTEL sites have already exceeded their normal amount of precipitation that is typically received over an entire year, and there are four more months to go to wrap up the water year. Four SNOTEL sites have set new records for highest water year to date precipitation amounts.

For the month of May, the precipitation ranged from 35% in Lake County and Goose lake basin to 101% of average in the Hood, Sandy and Lower Deschutes basin (the only location in the state to receive near average amounts in May). For the water year to date, the wettest area has been in the Rogue and Umpqua basins where precipitation has brought 142% of average amounts and the lightest amounts of precipitation fell in the Harney basin at 116% of average.

RESERVOIRS

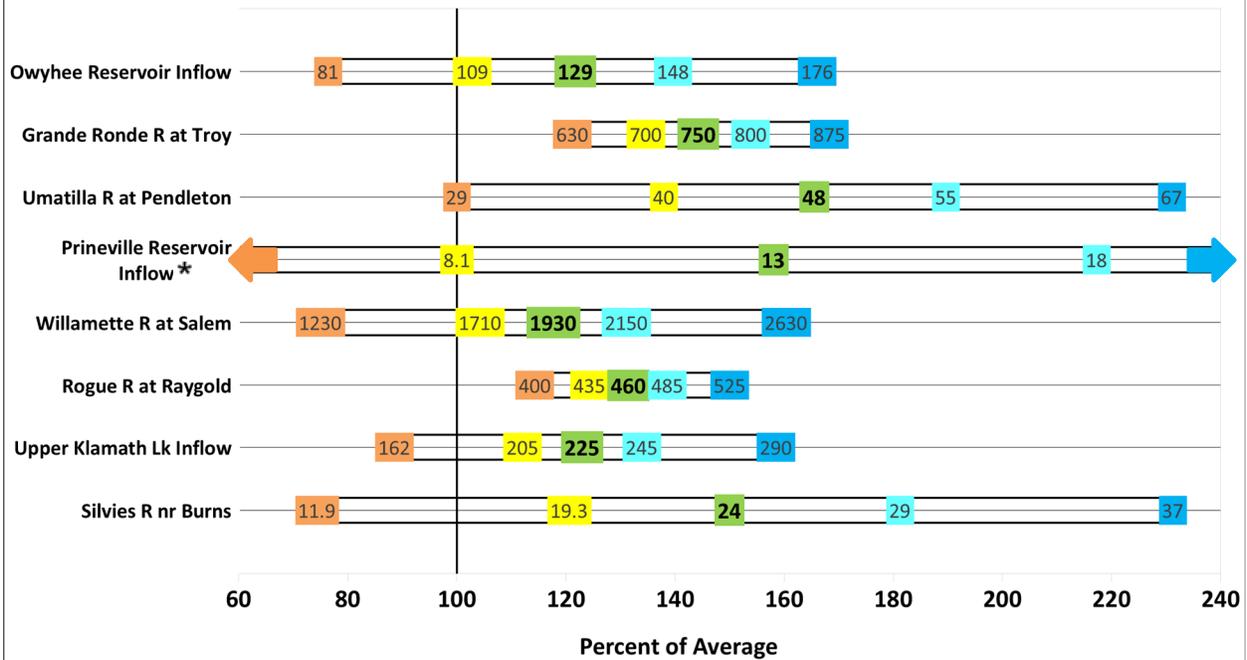
Reservoirs throughout the state are storing near average to above average amounts of water, setting up the water supply season nicely for those with access to reservoir water for irrigation and for recreation. For the second month in a row, Drews and Cottonwood reservoirs in the Lake County and Goose Lake region are storing the highest percentage of normal reservoir volumes at 139% of normal. Both reservoirs remain full but are no longer spilling water over their spillways. In general, the Rogue and Umpqua reservoirs are storing the lowest amounts of water as a group, but still above average at 102%.

STREAMFLOW

May was the third month in a row for above average flows in Oregon's streams and rivers despite the month's below average precipitation. Warm temperatures and steady snowmelt joined forces in May to keep streamflows running higher than usual. Previous months had pumped streams full of relentless precipitation and flushes of low elevation snowmelt. The higher than normal streamflow trend is expected to continue due to the persistent wet season and the remaining above normal snowpack left in the high country. The June 1st streamflow forecasts call for near average to well above average streamflows for the summer water supply season across Oregon, which would be the first time since 2011 when the entire state had experienced above average summer streamflows.

To accompany the new forecast summary graphic on the following page, here are some helpful reminders about interpreting streamflow forecasts published in this document. For each forecast point, 5 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 previous page and explained in more detail on page 33.

Summary of Streamflow Forecasts across Oregon
 June through September Forecast Volumes at a Selection of Streamflow Points
 (Volumes listed in KAF)

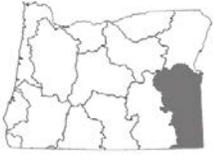


Legend: ←-----Drier-----Future Conditions-----Wetter-----→				
90% Exceedance Forecast (KAF) There is a 90% chance that flows will exceed this volume.	70% Exceedance Forecast (KAF) There is a 70% chance that flows will exceed this volume.	50% Exceedance Forecast (KAF) There is a 50% chance that flows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

* For this forecast point, the 90% and 10% exceedance forecasts are outside the bounds of this graphic. For more information, please refer to the basin forecast table on page 14.

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.

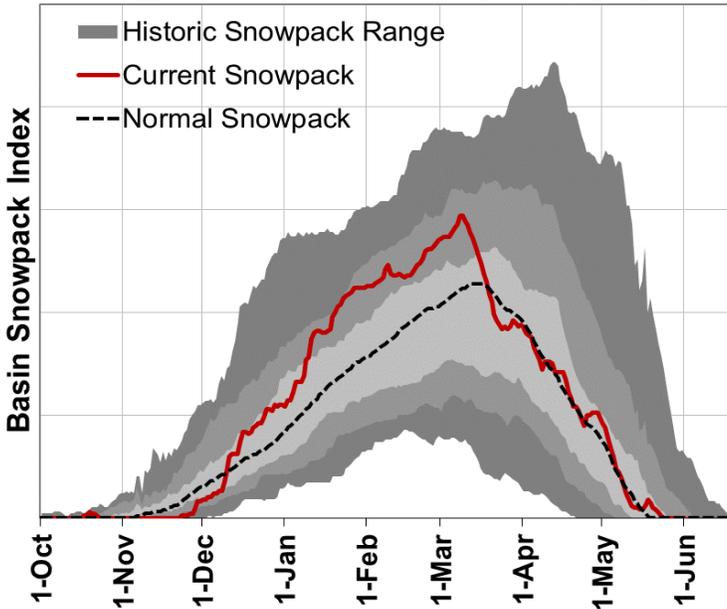
Note: A select set of streamflow forecasts have been discontinued in the Rogue, Grande Ronde and Willamette basins. Please contact us for more information.



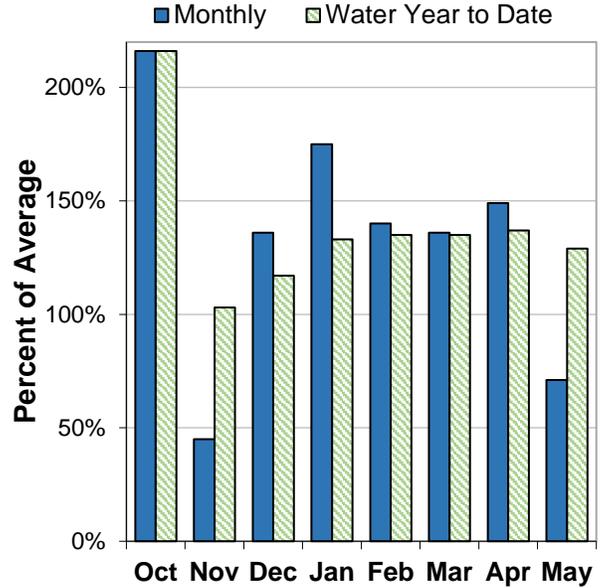
Owyhee and Malheur Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites below 8500 feet in the basin are snow-free, which is typical for this time of year. In general, SNOTEL sites in the basin peaked around 100% to 150% of normal peak snowpack levels this winter. Snowmelt timing was near normal this spring.

PRECIPITATION

May precipitation was 71% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 129% of average.

RESERVOIR

Reservoir storage across the basin is currently average to well above average. As of June 1, storage at major reservoirs in the basin ranges from 100% of average at Bully Creek Reservoir to 139% of average at Warm Springs Reservoir. After several years of well below normal volumes, all major reservoirs in the basin are reporting storage volumes at or very near full capacity.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 122% to 168% of average. Water managers in the basin should expect well above normal streamflows this summer.

Owyhee And Malheur Basins Summary for June 1, 2017

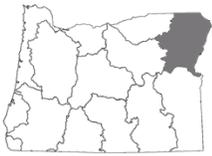
Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Owyhee R nr Rome	JUN-JUL	40	66	83	132%	100	125	63
	JUN-SEP	55	83	102	128%	120	148	80
Owyhee R bl Owyhee Dam ²	JUN-JUL	53	79	97	128%	114	140	76
	JUN-SEP	81	109	129	122%	148	176	106
Malheur R nr Drewsey	JUN-JUL	10.6	15.4	18.7	173%	22	27	10.8
	JUN-SEP	12.4	17.7	21	168%	25	30	12.5
NF Malheur R at Beulah ²	JUN-JUL	13.5	18.5	22	161%	25	30	13.7

* 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	58.0	50.2	46.7	124%	59.2
Bully Creek	23.2	20.6	23.2	100%	23.7
Lake Owyhee	715.5	454.3	536.2	133%	715.0
Warm Springs	169.8	94.9	122.4	139%	169.6

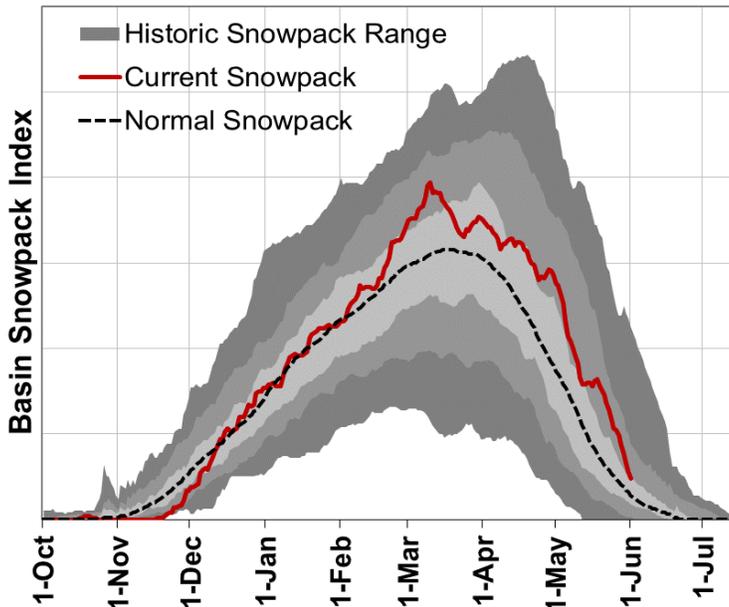
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Jun	28	11.9	0.0	1.5	793%
Trout Creek AM	7890	1-Jun	0	0.0	0.0		
Toe Jam SNOTEL	7700	1-Jun	0	0.0	0.0		
Govt Corrals AM	7400	1-Jun	0	0.0	0.0		
Jack Creek Upper SNOTEL	7250	1-Jun	0	0.0	0.0	0.0	
Fawn Creek SNOTEL	7000	1-Jun	0	0.0	0.0	0.0	
Buckskin Lower SNOTEL	6915	1-Jun	0	0.0	0.0	0.0	
Big Bend SNOTEL	6700	1-Jun	0	0.0	0.0	0.0	
Fry Canyon SNOTEL	6700	1-Jun	0	0.0	0.0		
Laurel Draw SNOTEL	6697	1-Jun	0	0.0	0.0	0.0	
South Mtn. SNOTEL	6500	1-Jun	0	0.0	0.0	0.0	
Taylor Canyon SNOTEL	6200	1-Jun	0	0.0	0.0	0.0	
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0	
Mud Flat SNOTEL	5730	1-Jun	0	0.0	0.0	0.0	
Reynolds Creek SNOTEL	5600	1-Jun	0	0.0	0.0	0.0	
Rock Springs SNOTEL	5290	1-Jun	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0	



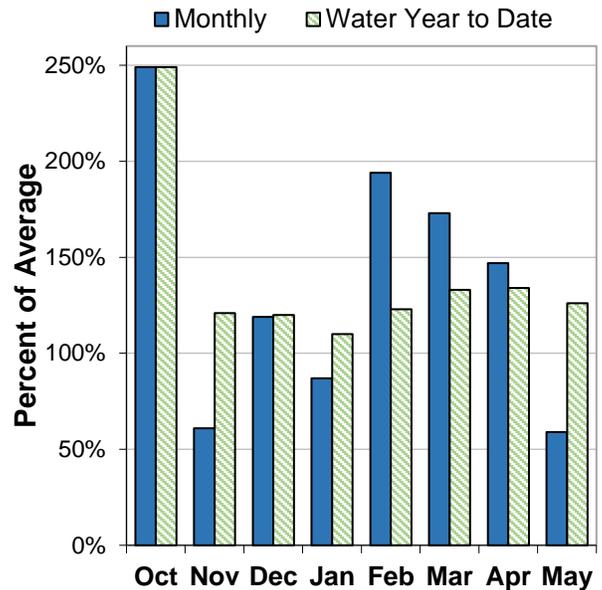
Grande Ronde, Powder, Burnt and Imnaha Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the few SNOTEL sites in the basin that haven't melted out are reporting well above normal snowpack. In general, SNOTEL sites in the basin peaked around 100% to 140% of normal peak snowpack levels this winter. Most higher elevation SNOTEL sites (above 5000 ft) melted out 1 to 2 weeks later than normal, while lower elevation sites melted out earlier than normal.

PRECIPITATION

May precipitation was 59% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 126% of average. Eilertson Meadows SNOTEL set a new record for the most October through May precipitation (38.0"; 155% of average). This site has been measured continuously since 1980.

RESERVOIR

Reservoir storage across the basin is currently above average. As of June 1, storage at major reservoirs in the basin ranges from 102% of average at Wallowa Lake to 114% of average at Wolf Creek Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 133% to 196% of average. Water managers in the basin should expect well above normal streamflows this summer.

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Burnt R nr Hereford ²	JUN-JUL	4.6	6.9	8.4	200%	9.9	12.2	4.2
	JUN-SEP	6.6	9.3	11.1	185%	12.8	15.5	6.0
Powder R nr Sumpter ²	JUN-JUL	18.8	25	29	200%	33	39	14.5
	JUN-SEP	19.7	26	31	196%	35	42	15.8
Pine Ck nr Oxbow	JUN-JUL	54	63	69	133%	75	84	52
	JUN-SEP	60	69	76	133%	82	91	57
Imnaha R at Imnaha	JUN-JUL	149	163	173	159%	183	197	109
	JUN-SEP	176	192	200	154%	215	230	130
Catherine Ck nr Union	JUN-JUL	21	26	30	136%	34	39	22
	JUN-SEP	25	31	35	135%	38	44	26
Lostine R nr Lostine	JUN-JUL	85	92	97	143%	102	109	68
	JUN-SEP	95	103	109	143%	114	122	76
Bear Ck nr Wallowa	JUN-JUL	33	38	41	137%	45	50	30
	JUN-SEP	35	40	44	133%	48	53	33
Grande Ronde R at Troy	JUN-JUL	520	590	640	149%	690	760	430
	JUN-SEP	630	700	750	144%	800	875	520

* 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	66.2	33.9	58.7	113%	73.5
Thief Valley	14.5	13.4	13.6	106%	13.3
Unity	23.4	21.2	22.4	105%	25.5
Wallowa Lake	27.7	30.3	27.2	102%	37.5
Wolf Creek	11.1	9.0	9.7	114%	11.1

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for June 1, 2017

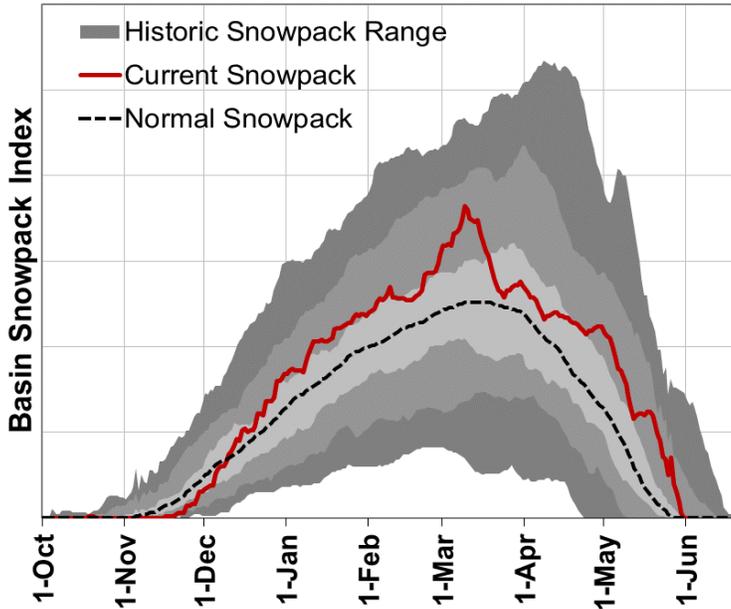
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Jun	22	11.1	0.0	6.0	185%
Aneroid Lake #2 SNOTEL	7400	1-Jun	48	23.4	17.2	16.8	139%
TV Ridge AM	7050	1-Jun	0	0.0	0.0		
Big Sheep AM	6230	1-Jun	17	7.7	0.0		
Bear Saddle SNOTEL	6180	1-Jun	0	0.0	0.0	0.0	
Bourne SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Moss Springs SNOTEL	5760	1-Jun	9	4.4	0.0	0.2	2200%
Taylor Green SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
Spruce Springs SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
Wolf Creek SNOTEL	5630	1-Jun	0	0.0	0.0	0.0	
West Branch SNOTEL	5560	1-Jun	0	0.0	0.0	0.0	
Touchet SNOTEL	5530	1-Jun	0	0.0	0.0	0.0	
Eilertson Meadows SNOTEL	5510	1-Jun	0	0.0	0.0	0.0	
Gold Center SNOTEL	5410	1-Jun	0	0.0	0.0	0.0	
Schneider Meadows SNOTEL	5400	1-Jun	2	0.7	0.0	0.0	
Beaver Reservoir SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Tipton SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
High Ridge SNOTEL	4920	1-Jun	0	0.0	0.0	0.0	
County Line SNOTEL	4830	1-Jun	0	0.0	0.0	0.0	
Bowman Springs SNOTEL	4530	1-Jun	0	0.0	0.0	0.0	
Sourdough Gulch SNOTEL	4000	1-Jun	0	0.0	0.0	0.0	



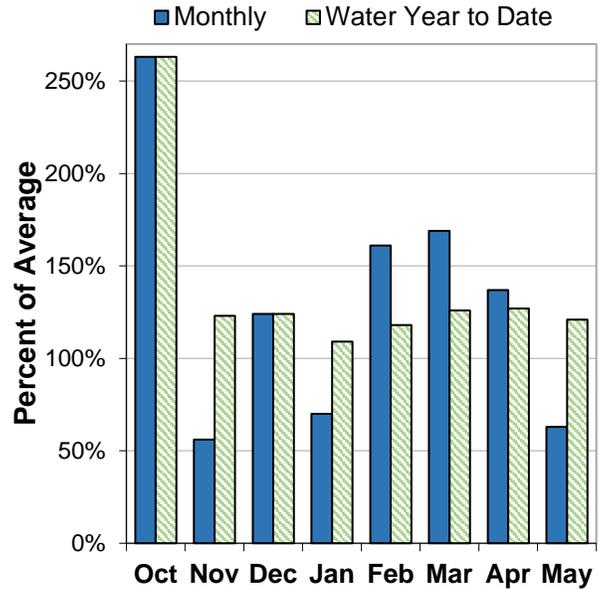
Umatilla, Walla Walla and Willow Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, Milk Shakes SNOTEL is the only site in the basin that still has snow, which is typical for this time of year. In general, SNOTEL sites in the basin peaked around 110% to 160% of normal peak snowpack levels this winter. Snowmelt timing was near normal this spring.

PRECIPITATION

May precipitation was 63% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 121% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 89% of average at Cold Springs Reservoir to 115% of average at Mckay Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 116% to 166% of average. Water managers in the basin should expect above normal to well above normal streamflows this summer.

Umatilla, Walla Walla And Willow Basins Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater	JUN-JUL	18.5	21	23	126%	25	27	18.2
	JUN-SEP	31	34	36	116%	39	42	31
Umatilla R ab Meacham nr Gibbon	JUN-JUL	13.8	18.6	22	155%	25	30	14.2
	JUN-SEP	19.3	24	28	143%	31	36	19.6
Umatilla R at Pendleton	JUN-JUL	22	33	41	171%	48	59	24
	JUN-SEP	29	40	48	166%	55	67	29
McKay Ck nr Pilot Rock	JUN-SEP	0.58	4.1	6.4	160%	8.8	12.3	4.0
Butter Ck nr Pine City	JUN-JUL	1.31	2.4	3.2	170%	3.9	5.0	1.88
	JUN-SEP	1.91	3.0	3.8	165%	4.5	5.6	2.3
Willow Ck ab Willow Lk nr Heppner	JUN-JUL	0.81	2.1	3.0	191%	3.9	5.3	1.57
Rhea Ck nr Heppner	JUN-JUL	1.35	2.3	3.0	178%	3.6	4.6	1.69

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

Reservoir Storage	Current	Last Year	Average	% of	Useable
	(KAF)	(KAF)	(KAF)	Average	Capacity
Cold Springs	25.2	18.4	28.2	89%	38.6
Mckay	65.6	51.9	57.0	115%	71.5
Willow Creek	5.9	5.6	5.9	100%	9.8

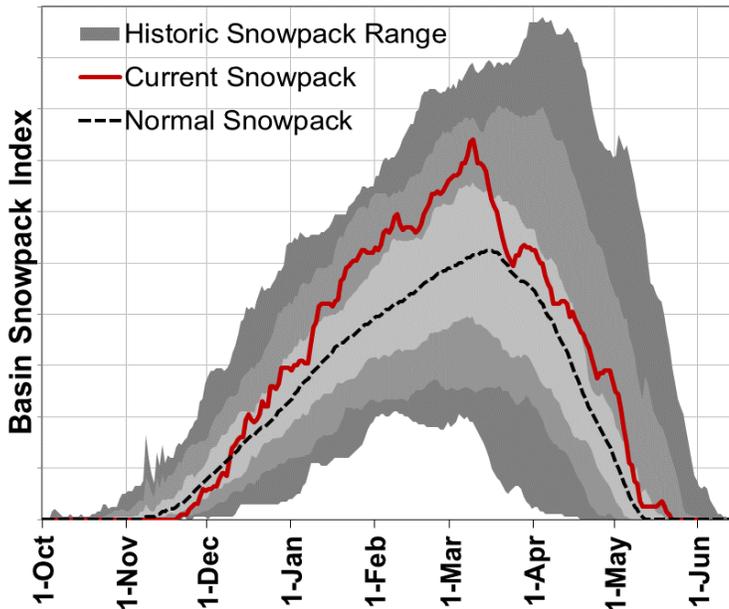
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Spruce Springs SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
Milk Shakes SNOTEL	5580	1-Jun	48	23.2	2.8		
Touchet SNOTEL	5530	1-Jun	0	0.0	0.0	0.0	
Madison Butte SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Lucky Strike SNOTEL	4970	1-Jun	0	0.0	0.0	0.0	
High Ridge SNOTEL	4920	1-Jun	0	0.0	0.0	0.0	
Bowman Springs SNOTEL	4530	1-Jun	0	0.0	0.0	0.0	
Emigrant Springs SNOTEL	3800	1-Jun	0	0.0	0.0	0.0	



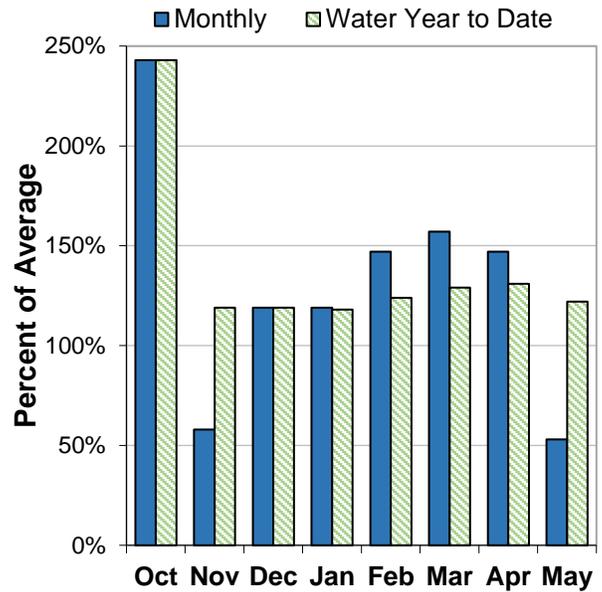
John Day Basin

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites in the basin are snow-free, which is typical for this time of year. In general, SNOTEL sites in the basin peaked around 100% to 160% of normal peak snowpack levels this winter. SNOTEL sites at the lower elevations of the basin (below 5300 ft) melted out between 0 and 3 weeks early, while the higher elevation sites melted out 0 to 3 weeks later than normal.

PRECIPITATION

May precipitation was 53% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 122% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 118% to 159% of average. Water managers in the basin should expect above normal to well above normal streamflows this summer.

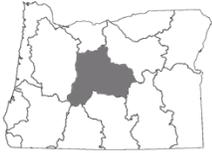
John Day Basin Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Strawberry Ck nr Prairie City	JUN-JUL	4.2	5.3	6.0	130%	6.7	7.8	4.6
	JUN-SEP	4.9	6.1	6.9	133%	7.7	8.8	5.2
Mountain Ck nr Mitchell	JUN-JUL	0.75	1.17	1.46	162%	1.74	2.2	0.90
	JUN-SEP	0.87	1.31	1.61	159%	1.91	2.4	1.01
Camas Ck nr Ukiah	JUN-JUL	1.45	4.2	6.0	118%	7.9	10.6	5.1
	JUN-SEP	2.2	4.9	6.7	118%	8.6	11.3	5.7
MF John Day R at Ritter	JUN-JUL	19.1	31	38	136%	46	58	28
	JUN-SEP	24	36	44	138%	52	64	32
NF John Day R at Monument	JUN-JUL	70	121	155	123%	190	240	126
	JUN-SEP	86	139	175	122%	210	265	143

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

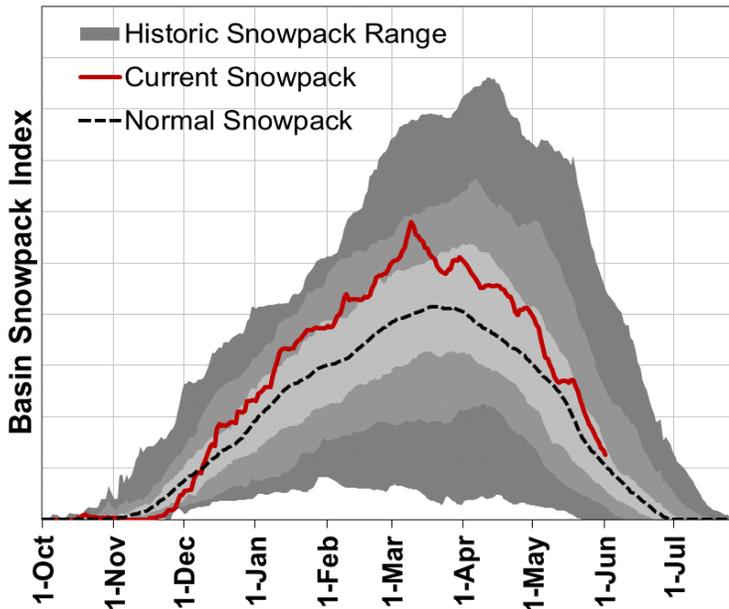
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0	
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0	
Bourne SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Derr. SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Arbuckle Mtn SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Ochoco Meadows SNOTEL	5430	1-Jun	0	0.0	0.0	0.0	
Gold Center SNOTEL	5410	1-Jun	0	0.0	0.0	0.0	
Starr Ridge SNOTEL	5250	1-Jun	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0	
Madison Butte SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Tipton SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Lucky Strike SNOTEL	4970	1-Jun	0	0.0	0.0	0.0	
County Line SNOTEL	4830	1-Jun	0	0.0	0.0	0.0	



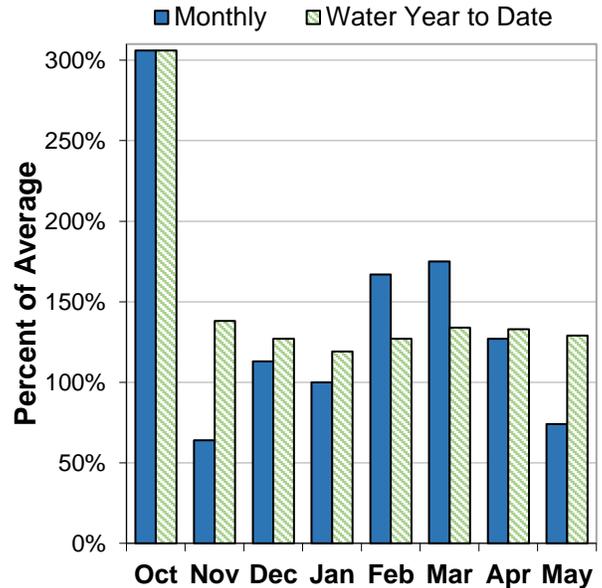
Upper Deschutes and Crooked Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the five SNOTEL sites in the basin that haven't melted out are reporting near normal to well above normal snowpack. In general, SNOTEL sites in the basin peaked around 120% to 170% of normal peak snowpack levels this winter and those that are snow-free on June 1 melted out 0 to 3 weeks later than normal this spring.

PRECIPITATION

May precipitation was 74% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 129% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 97% of average at Wickiup Reservoir to 131% of average at Crescent Lake.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 111% to 206% of average. Water managers in the basin should expect above normal to well above normal streamflows this summer.

Upper Deschutes And Crooked Basins Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	JUN-JUL	20	23	24	140%	26	29	17.2
	JUN-SEP	48	53	57	143%	60	65	40
Crane Prairie Reservoir Inflow ²	JUN-JUL	36	40	43	143%	46	50	30
	JUN-SEP	74	82	87	140%	92	100	62
Crescent Lake Inflow ²	JUN-JUL	8.6	10.6	12.0	197%	13.4	15.4	6.1
	JUN-SEP	11.9	15.1	17.3	206%	19.4	23	8.4
Little Deschutes R nr La Pine ²	JUN-JUL	29	36	41	186%	46	53	22
	JUN-SEP	38	47	53	196%	59	67	27
Deschutes R at Benham Falls ²	JUN-JUL	163	176	185	113%	193	205	163
	JUN-SEP	335	355	365	111%	380	400	330
Wychus Ck nr Sisters	JUN-JUL	23	26	28	127%	29	32	22
	JUN-SEP	36	40	42	124%	44	48	34
Prineville Reservoir Inflow ²	JUN-JUL	1.80	8.2	12.6	152%	17.0	23	8.3
	JUN-SEP	1.11	8.1	12.8	158%	17.6	25	8.1
Ochoco Reservoir Inflow ²	JUN-JUL	0.81	3.0	4.5	167%	5.9	8.1	2.7
	JUN-SEP	0.41	2.6	4.1	186%	5.6	7.8	2.2

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

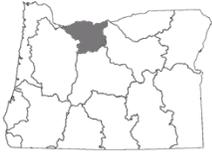
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Crane Prairie	48.2	44.7	42.8	113%	55.3
Crescent Lake	71.0	59.8	54.4	131%	86.9
Ochoco	41.3	40.3	34.6	119%	44.2
Prineville	148.5	137.7	140.5	106%	148.6
Wickiup	155.5	142.9	159.7	97%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	144%	76%
Upper Crooked Basin	2		
Upper Deschutes Basin	9	121%	50%

Upper Deschutes And Crooked Basins Summary for June 1, 2017

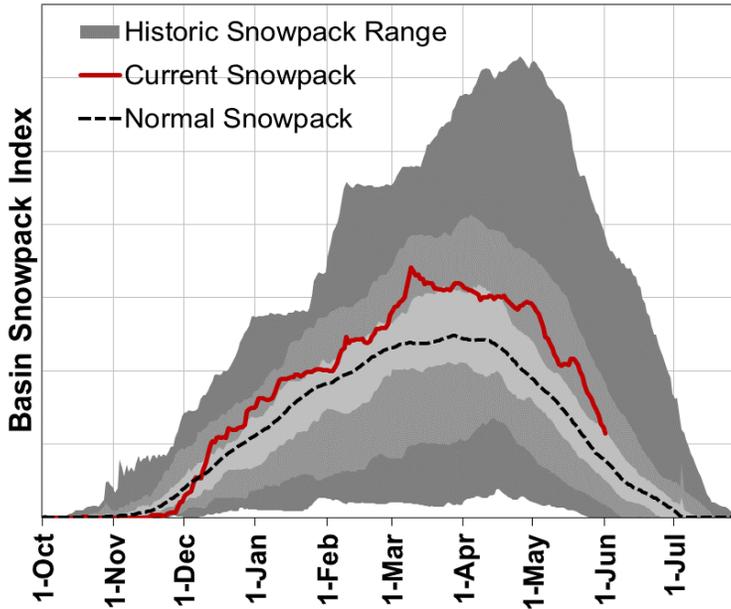
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0	
Derr. SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Three Creeks Meadow SNOTEL	5690	1-Jun	0	0.0	0.0	0.0	
Summit Lake SNOTEL	5610	1-Jun	80	40.3	23.4	30.5	132%
Irish Taylor SNOTEL	5540	1-Jun	56	26.4	12.7	26.7	99%
Ochoco Meadows SNOTEL	5430	1-Jun	0	0.0	0.0	0.0	
Cascade Summit SNOTEL	5100	1-Jun	7	3.8	0.0	0.2	1900%
Roaring River SNOTEL	4950	1-Jun	4	1.7	0.0	0.0	
New Crescent Lake SNOTEL	4910	1-Jun	0	0.0	0.0	0.0	
Chemult Alternate SNOTEL	4850	1-Jun	0	0.0	0.0	0.0	
Hogg Pass SNOTEL	4790	1-Jun	0	0.0	0.0	0.0	
McKenzie SNOTEL	4770	1-Jun	31	15.5	0.0	15.2	102%
Salt Creek Falls SNOTEL	4220	1-Jun	0	0.0	0.0	0.0	
Santiam Jct. SNOTEL	3740	1-Jun	0	0.0	0.0	0.0	



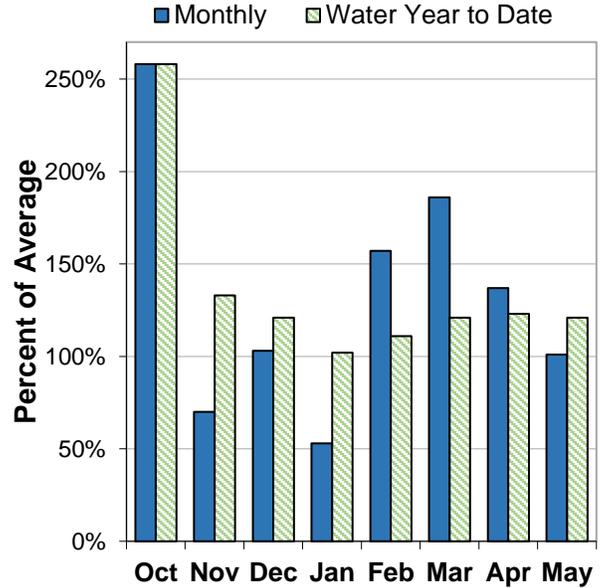
Hood, Sandy and Lower Deschutes Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, most higher elevation (above 3600 ft) SNOTEL sites in the basin are still reporting significant snowpack which is generally above normal for this time of year. SNOTEL sites in the basin peaked around 120% to 150% of normal peak snowpack levels this winter and those that are snow-free on June 1 melted out 1 to 3 weeks later than normal this spring.

PRECIPITATION

May precipitation was 101% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 121% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 109% to 118% of average. Water managers in the basin should expect above normal streamflows this summer.

Hood, Sandy And Lower Deschutes Basins Summary for June 1, 2017

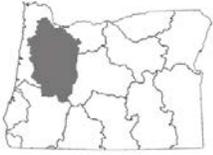
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood R nr Dee	JUN-JUL	35	40	43	108%	46	51	40
	JUN-SEP	52	58	63	109%	67	73	58
Hood R at Tucker Bridge	JUN-JUL	77	85	90	113%	95	103	80
	JUN-SEP	113	125	133	111%	141	152	120
Sandy R nr Marmot	JUN-JUL	99	119	132	120%	146	165	110
	JUN-SEP	144	168	185	118%	200	225	157

* 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	6.7	4.6	6.5	103%	13.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	150%	17%
Lower Deschutes Basin	4	96%	22%
Middle Columbia - Hood Basin	6	158%	26%

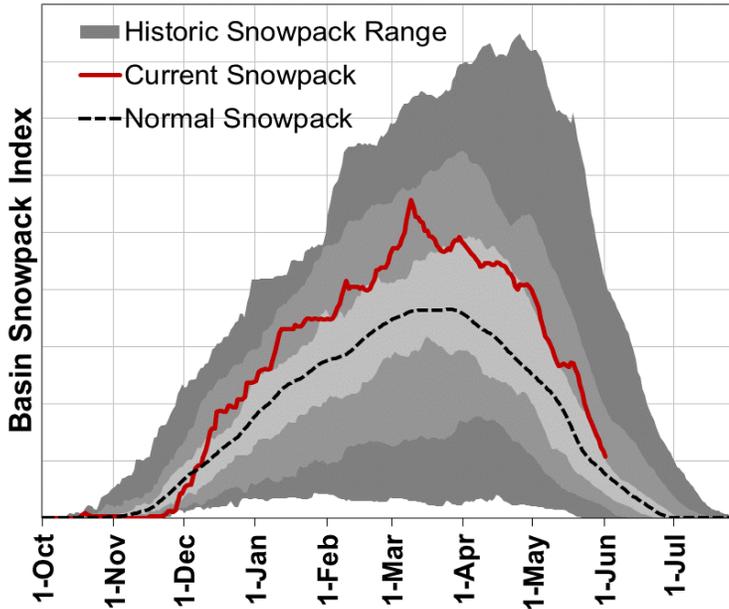
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt Hood Test Site SNOTEL	5370	1-Jun	80	39.1	10.7	48.1	81%
Red Hill SNOTEL	4410	1-Jun	53	36.3	0.0	13.5	269%
Surprise Lakes SNOTEL	4290	1-Jun	77	38.5	9.5	16.9	228%
Mud Ridge SNOTEL	4070	1-Jun	15	7.0	0.0	0.0	
Clear Lake SNOTEL	3810	1-Jun	0	0.0	0.0	0.0	
Blazed Alder SNOTEL	3650	1-Jun	17	9.8	0.0	0.0	
Clackamas Lake SNOTEL	3400	1-Jun	0	0.0	0.0	0.0	
Greenpoint SNOTEL	3310	1-Jun	0	0.0	0.0	0.0	
North Fork SNOTEL	3060	1-Jun	0	0.0	0.0	0.0	
South Fork Bull Run SNOTEL	2690	1-Jun	0	0.0	0.0	0.0	



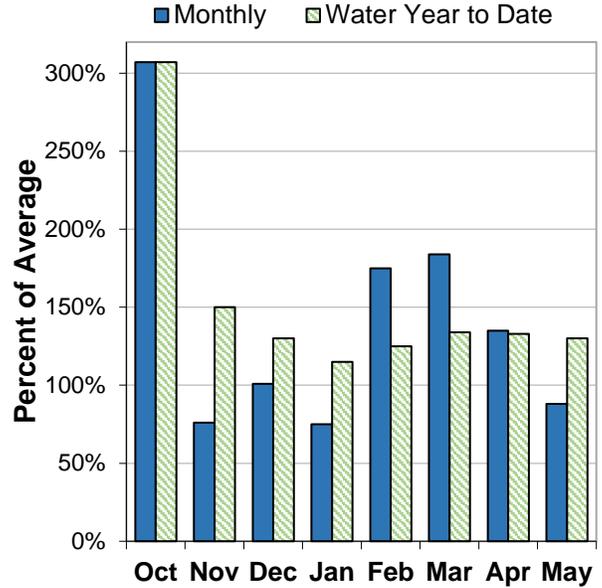
Willamette Basin

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, most higher elevation (above 4000 ft) SNOTEL sites in the basin are still reporting significant snowpack which is near normal to well above normal for this time of year. In general, SNOTEL sites in the basin peaked around 110% to 160% of normal peak snowpack levels this winter and those that are snow-free on June 1 melted out 1 to 3 weeks later than normal this spring.

PRECIPITATION

May precipitation was 88% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 130% of average. The weather station at Detroit Dam set a new record for the most October through May precipitation (132.5"; 162% of average). This site has been measured continuously since 1948 and the previous record was 116.9" set in 1974.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 95% of average at Foster Reservoir to 107% of average at Lookout Point Reservoir. All major reservoirs in the basin are reporting storage volumes at or very near full capacity as of June 1.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 96% to 131% of average. Water managers in the basin should expect near normal to well above normal streamflows this summer.

Willamette Basin Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hills Creek Reservoir Inflow ^{1,2}	JUN-SEP	112	139	151	117%	163	190	129
Lookout Point Reservoir Inflow ^{1,2}	JUN-SEP	285	350	380	115%	410	475	330
McKenzie R bl Trail Bridge	JUN-SEP	200	215	230	118%	240	255	195
Cougar Lake Inflow ^{1,2}	JUN-SEP	69	88	97	108%	105	125	90
Blue Lake Inflow ^{1,2}	JUN-SEP	7.1	18.6	24	121%	29	41	19.8
McKenzie R nr Vida ^{1,2}	JUN-SEP	525	605	640	112%	675	755	570
Detroit Lake Inflow ^{1,2}	JUN-SEP	260	310	335	129%	355	405	260
North Santiam R at Mehama ^{1,2}	JUN-SEP	315	400	440	131%	480	565	335
Green Peter Lake Inflow ^{1,2}	JUN-SEP	19.6	63	82	96%	102	145	85
Foster Lake Inflow ^{1,2}	JUN-SEP	46	123	158	96%	193	270	164
South Santiam R at Waterloo ²	JUN-SEP	75	129	165	96%	200	255	171
Willamette R at Salem ^{1,2}	JUN-SEP	1230	1710	1930	118%	2150	2630	1640
Oak Grove Fk ab Powerplant	JUN-JUL	46	52	56	122%	61	67	46
	JUN-SEP	85	95	102	120%	109	119	85
Clackamas R ab Three Lynx	JUN-JUL	127	158	179	121%	200	230	148
	JUN-SEP	220	255	275	117%	300	335	235
Clackamas R at Estacada	JUN-JUL	167	215	250	122%	285	335	205
	JUN-SEP	275	330	370	117%	405	460	315

* 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 June 1, 2017

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	82.1	69.3	78.6	104%	82.3
Cottage Grove	31.7	30.3	30.3	105%	31.8
Cougar	174.8	64.9	165.0	106%	174.9
Detroit	425.3	393.6	423.4	100%	426.8
Dorena	71.0	62.6	70.4	101%	72.1
Fall Creek	115.1	104.1	115.5	100%	116.0
Fern Ridge	96.3	96.0	91.5	105%	97.3
Foster	44.1	44.0	46.3	95%	46.2
Green Peter	399.3	331.7	381.2	105%	402.8
Hills Creek	274.3	199.8	268.3	102%	279.2
Lookout Point	423.7	274.5	396.8	107%	433.2
Timothy Lake	63.2	63.4	62.3	101%	63.6
Henry Hagg Lake	53.3	52.7	52.5	102%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	9	150%	17%
McKenzie Basin	13	121%	50%
Middle Fork Willamette Basin	7	126%	63%
North Santiam Basin	4		
South Santiam Basin	4		

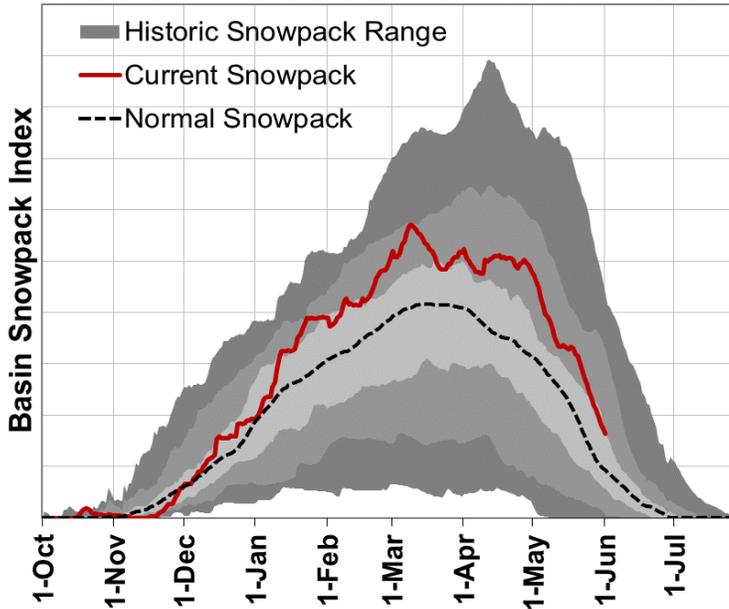
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Jun	80	40.3	23.4	30.5	132%
Irish Taylor SNOTEL	5540	1-Jun	56	26.4	12.7	26.7	99%
Cascade Summit SNOTEL	5100	1-Jun	7	3.8	0.0	0.2	1900%
Roaring River SNOTEL	4950	1-Jun	4	1.7	0.0	0.0	
Holland Meadows SNOTEL	4930	1-Jun	0	0.0	0.0	0.0	
McKenzie SNOTEL	4770	1-Jun	31	15.5	0.0	15.2	102%
Bear Grass SNOTEL	4720	1-Jun	61	38.9	0.0		
Salt Creek Falls SNOTEL	4220	1-Jun	0	0.0	0.0	0.0	
Mud Ridge SNOTEL	4070	1-Jun	15	7.0	0.0	0.0	
Little Meadows SNOTEL	4020	1-Jun	16	8.0	0.0	0.0	
Clear Lake SNOTEL	3810	1-Jun	0	0.0	0.0	0.0	
Santiam Jct. SNOTEL	3740	1-Jun	0	0.0	0.0	0.0	
Daly Lake SNOTEL	3690	1-Jun	0	0.0	0.0	0.0	
Jump Off Joe SNOTEL	3520	1-Jun	0	0.0	0.0	0.0	
Peavine Ridge SNOTEL	3420	1-Jun	0	0.0	0.0	0.0	
Clackamas Lake SNOTEL	3400	1-Jun	0	0.0	0.0	0.0	
Smith Ridge SNOTEL	3270	1-Jun	0	0.0	0.0		
Saddle Mountain SNOTEL	3110	1-Jun	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Jun	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Jun	0	0.0	0.0	0.0	
Seine Creek SNOTEL	2060	1-Jun	0	0.0	0.0	0.0	
Miller Woods SNOTEL	420	1-Jun	0	0.0	0.0		



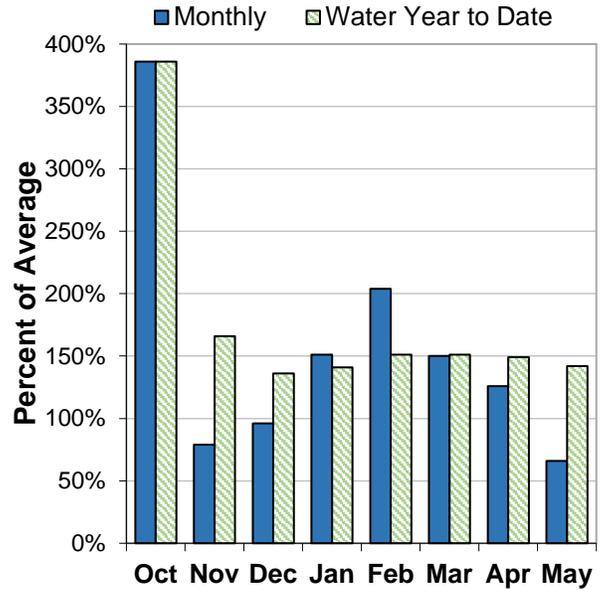
Rogue and Umpqua Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, most higher elevation (above 5600 ft) SNOTEL sites in the basin are still reporting significant snowpack which is near normal to well above normal for this time of year. In general, SNOTEL sites in the basin peaked around 100% to 150% of normal peak snowpack levels this winter and those that are snow-free on June 1 melted out 1 to 3 weeks later than normal this spring.

PRECIPITATION

May precipitation was 66% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 142% of average. Three SNOTEL sites set new records for the most October through May precipitation recorded since measurements began in 1980: Bigelow Camp (109.5"; 176% of average), Big Red (81.7"; 160% of average), and King Mountain (85.0"; 147% of average). In addition, the long term weather station in Grants Pass also set a new record for October to May precipitation (50.6", 174% of average) breaking the previous record which was set in 1956!

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 75% of average at Hyatt Prairie Reservoir to 125% of average at Howard Prairie Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 107% to 179% of average. Water managers in the basin should expect above normal to well above normal streamflows this summer.

Rogue And Umpqua Basins Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
South Umpqua R at Tiller	JUN-JUL	23	39	50	125%	60	76	40
	JUN-SEP	31	48	59	120%	70	86	49
Cow Ck ab Galesville Reservoir	JUN-JUL	1.73	2.7	3.3	110%	4.0	4.9	3.0
	JUN-SEP	2.7	3.8	4.5	107%	5.3	6.4	4.2
South Umpqua R nr Brockway	JUN-JUL	40	67	85	118%	104	131	72
	JUN-SEP	55	85	106	118%	126	156	90
North Umpqua R at Winchester	JUN-JUL	245	285	310	132%	340	380	235
	JUN-SEP	370	415	445	127%	475	515	350
Lost Creek Lk Inflow ²	JUN-JUL	215	230	245	120%	260	280	205
	JUN-SEP	350	380	395	120%	415	440	330
Rogue R at Raygold ²	JUN-JUL	240	270	295	134%	315	345	220
	JUN-SEP	400	435	460	131%	485	525	350
Rogue R at Grants Pass ²	JUN-JUL	240	275	300	136%	325	360	220
	JUN-SEP	385	425	455	134%	485	530	340
Applegate Lake Inflow ²	JUN-JUL	42	48	51	182%	55	61	28
	JUN-SEP	50	56	61	179%	65	71	34
Sucker Ck bl Ltl Grayback nr Holland	JUN-JUL	11.4	14.8	17.1	126%	19.4	23	13.6
	JUN-SEP	15.1	18.9	21	119%	24	28	17.6
Illinois R nr Kerby	JUN-JUL	16.0	29	39	122%	48	61	32
	JUN-SEP	21	35	45	118%	55	69	38

* 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	68.2	67.7	64.9	105%	75.2
Emigrant Lake	38.1	36.3	35.5	107%	39.0
Fish Lake	6.3	5.9	6.2	101%	7.9
Fourmile Lake	10.7	9.5	10.7	100%	15.6
Howard Prairie	60.2	41.6	48.3	125%	62.1
Hyatt Prairie	9.9	11.9	13.2	75%	16.2
Lost Creek	298.1	291.0	302.6	99%	315.0

Rogue And Umpqua Basins Summary for June 1, 2017

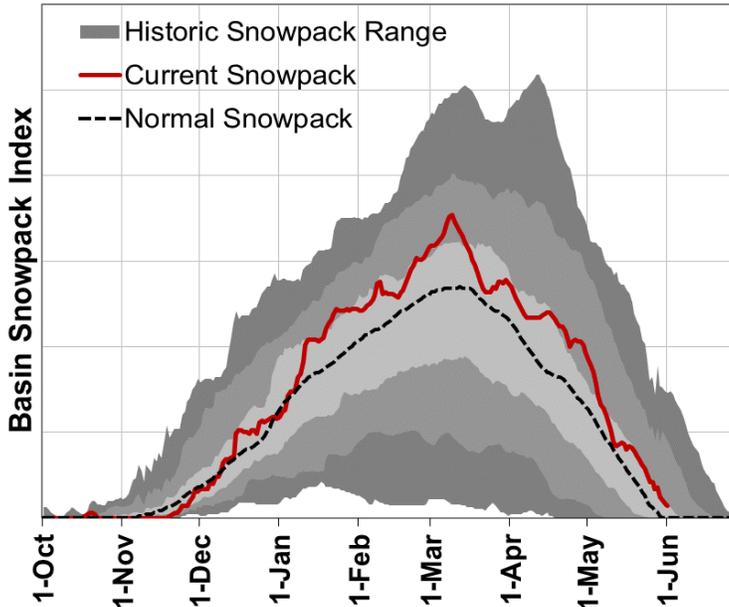
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Big Red Mountain SNOTEL	6050	1-Jun	25	12.8	0.0	0.2	6400%
Annie Springs SNOTEL	6010	1-Jun	69	34.0	9.5	24.0	142%
Fourmile Lake SNOTEL	5970	1-Jun	1	0.4	0.0	0.0	
Cold Springs Camp SNOTEL	5940	1-Jun	0	0.0	0.0	0.0	
Sevenmile Marsh SNOTEL	5700	1-Jun	21	9.9	0.0	0.0	
Summit Lake SNOTEL	5610	1-Jun	80	40.3	23.4	30.5	132%
Billie Creek Divide SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Diamond Lake SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Bigelow Camp SNOTEL	5130	1-Jun	0	0.0	0.0	0.0	
Fish Lk. SNOTEL	4660	1-Jun	0	0.0	0.0	0.0	
Howard Prairie SNOTEL	4580	1-Jun	0	0.0	0.0		
King Mountain SNOTEL	4340	1-Jun	0	0.0	0.0	0.0	
Tokenetee Airstrip SNOTEL	3240	1-Jun	0	0.0	0.0	0.0	



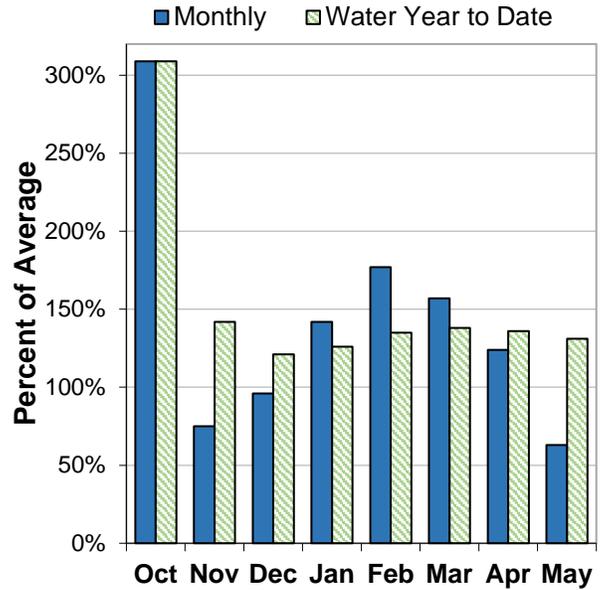
Klamath Basin

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all but three SNOTEL sites in the basin have melted out. The remaining sites are reporting above normal snowpack for this time of year. In general, SNOTEL sites in the basin peaked around 100% to 150% of normal peak snowpack levels this winter. Snowmelt timing was near normal this spring.

PRECIPITATION

May precipitation was 63% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 131% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 98% of average at Upper Klamath Lake to 139% of average at Gerber Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 119% to 174% of average. Water managers in the basin should expect above normal to well above normal streamflows this summer.

Klamath Basin Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Gerber Reservoir Inflow ²	JUN-JUL	0.25	1.66	2.6	182%	3.6	5.0	1.43
	JUN-SEP	0.36	1.96	3.1	174%	4.1	5.8	1.78
Sprague R nr Chiloquin	JUN-JUL	53	63	70	140%	77	88	50
	JUN-SEP	76	89	99	136%	108	122	73
Williamson R bl Sprague nr Chiloquin	JUN-JUL	91	103	111	123%	119	131	90
	JUN-SEP	150	166	177	119%	188	205	149
Upper Klamath Lake Inflow ^{1,2}	JUN-JUL	93	120	133	128%	146	173	104
	JUN-SEP	162	205	225	123%	245	290	183

* 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	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Clear Lake	283.4	117.2	247.4	115%	513.3
Gerber	90.2	42.9	65.0	139%	94.3
Upper Klamath Lake	434.9	458.1	445.2	98%	523.7

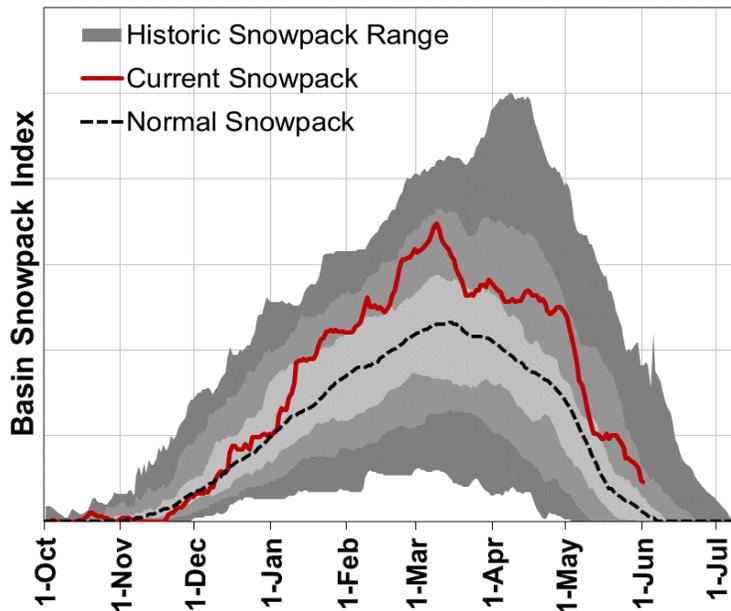
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jun	0	0.0	0.0	0.0	
Swan Lake Mtn SNOTEL	6830	1-Jun	0	0.0	0.0	0.0	
Crazyman Flat SNOTEL	6180	1-Jun	0	0.0	0.0	0.0	
Annie Springs SNOTEL	6010	1-Jun	69	34.0	9.5	24.0	142%
Finley Corrals AM	6000	1-Jun	0	0.0	0.0	0.0	
Fourmile Lake SNOTEL	5970	1-Jun	1	0.4	0.0	0.0	
Cold Springs Camp SNOTEL	5940	1-Jun	0	0.0	0.0	0.0	
Strawberry SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Cox Flat AM	5750	1-Jun	0	0.0	0.0	0.0	
Silver Creek SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
Quartz Mountain SNOTEL	5720	1-Jun	0	0.0	0.0	0.0	
Sevenmile Marsh SNOTEL	5700	1-Jun	21	9.9	0.0	0.0	
State Line SNOTEL	5680	1-Jun	0	0.0	0.0	0.0	
Sun Pass SNOTEL	5400	1-Jun	0	0.0	0.0	0.0	
Billie Creek Divide SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Diamond Lake SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Crowder Flat SNOTEL	5170	1-Jun	0	0.0	0.0	0.0	
Taylor Butte SNOTEL	5030	1-Jun	0	0.0	0.0	0.0	
Gerber Reservoir SNOTEL	4890	1-Jun	0	0.0	0.0	0.0	
Chemult Alternate SNOTEL	4850	1-Jun	0	0.0	0.0	0.0	
Fish Lk. SNOTEL	4660	1-Jun	0	0.0	0.0	0.0	
Howard Prairie SNOTEL	4580	1-Jun	0	0.0	0.0	0.0	



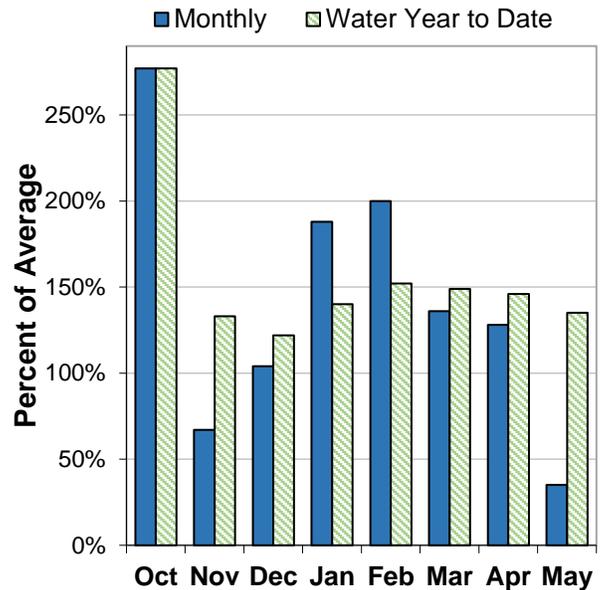
Lake County and Goose Lake Basins

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, Dismal Swamp SNOTEL (CA, 7360 ft elevation) is the only snow measurement site in the basin that hasn't melted out and the remaining snowpack at this site is over four times the typical amount for June 1. In general, SNOTEL sites in the basin peaked around 110% to 160% of normal peak snowpack levels this winter. Snowmelt timing was near normal this spring.

PRECIPITATION

May precipitation was 35% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 135% of average.

RESERVOIR

Reservoir storage across the basin is currently well above average. As of June 1, storage at major reservoirs in the basin ranges from 133% of average at Cottonwood Reservoir to 140% of average at Drews Reservoir. Both Drews and Cottonwood Reservoirs are reporting 100% of capacity as of June 1.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 170% to 209% of average. Water managers in the basin should expect well above normal streamflows this summer.

Lake County And Goose Lake Basins Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Twentymile Ck nr Adel	JUN-JUL	5.7	6.6	7.2	189%	7.8	8.7	3.8
	JUN-SEP	6.3	7.3	7.9	184%	8.6	9.6	4.3
Deep Ck ab Adel	JUN-JUL	23	27	30	216%	32	36	13.9
	JUN-SEP	26	30	33	209%	35	39	15.8
Honey Ck nr Plush	JUN-JUL	2.8	3.8	4.4	169%	5.1	6.1	2.6
	JUN-SEP	2.9	3.9	4.6	170%	5.3	6.4	2.7
Chewaucan R nr Paisley	JUN-JUL	27	31	34	179%	38	42	19.0
	JUN-SEP	32	37	40	174%	43	48	23

* 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	9.3	8.7	7.0	133%	9.3
Drews	63.5	44.6	45.5	140%	63.5

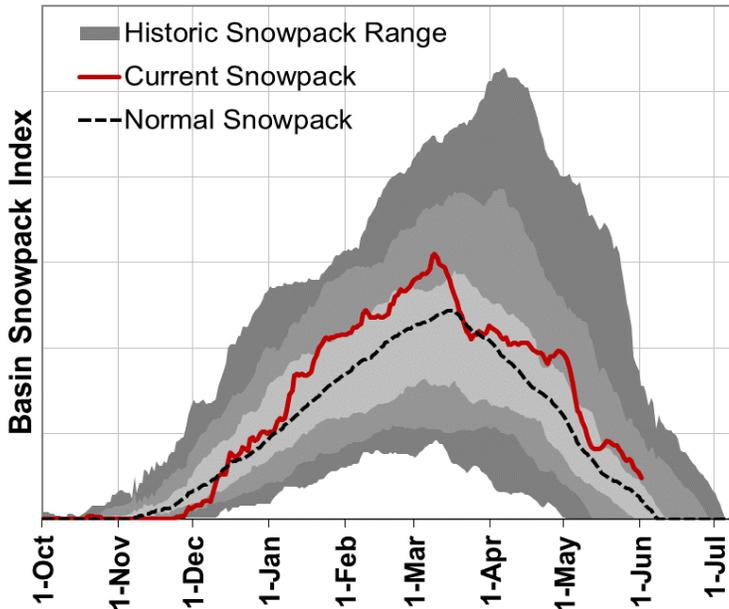
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Dismal Swamp SNOTEL	7360	1-Jun	58	19.2	12.1	4.2	457%
Summer Rim SNOTEL	7080	1-Jun	0	0.0	0.0	0.0	
Cedar Pass SNOTEL	7030	1-Jun	0	0.0	0.0	0.0	
Patton Meadows AM	6800	1-Jun	0	0.0	0.0		
Sherman Valley AM	6640	1-Jun	0	0.0	0.0		
Hart Mountain AM	6430	1-Jun	0	0.0	0.0		
Adin Mtn SNOTEL	6190	1-Jun	0	0.0	0.0	0.0	
Crazyman Flat SNOTEL	6180	1-Jun	0	0.0	0.0	0.0	
Finley Corrals AM	6000	1-Jun	0	0.0	0.0		
Sheldon SCAN	5860	1-Jun	0	0.0	0.0	0.0	
Strawberry SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Cox Flat AM	5750	1-Jun	0	0.0			
Silver Creek SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
State Line SNOTEL	5680	1-Jun	0	0.0	0.0		
Crowder Flat SNOTEL	5170	1-Jun	0	0.0	0.0	0.0	



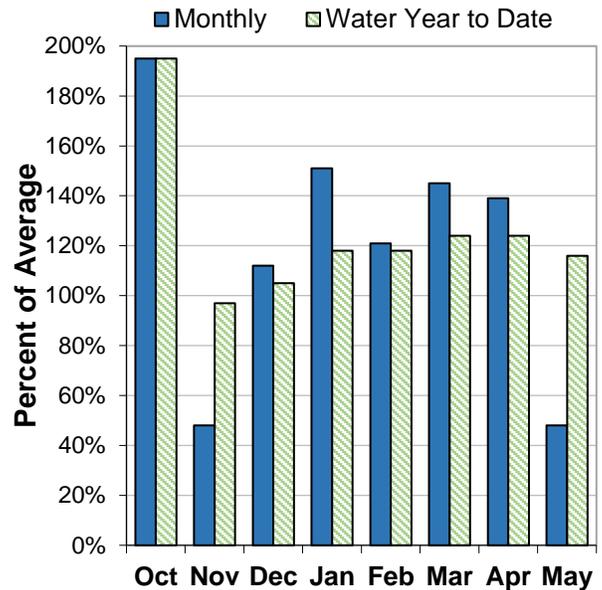
Harney Basin

June 1, 2017

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites below 7600 feet in the basin are snow-free, which is typical for this time of year. The two SNOTEL sites with snowpack remaining (Fish Creek and Granite Peak) are both reporting higher than normal snowpack levels. In general, SNOTEL sites in the basin peaked around 110% to 160% of normal peak snowpack levels this winter. Snowmelt timing was near normal this spring.

PRECIPITATION

May precipitation was 48% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 116% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 123% to 174% of average. Water managers in the basin should expect well above normal streamflows this summer.

Harney Basin Summary for June 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Silvies R nr Burns	JUN-JUL	9.3	16.2	21	156%	26	32	13.5
	JUN-SEP	11.9	19.3	24	150%	29	37	16.0
Donner Und Blitzen R nr Frenchglen	JUN-JUL	20	26	30	125%	34	40	24
	JUN-SEP	26	32	37	123%	41	48	30
Trout Ck nr Denio	JUN-JUL	2.8	3.6	4.1	186%	4.6	5.4	2.2
	JUN-SEP	3.3	4.1	4.7	174%	5.3	6.2	2.7

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

Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Jun	28	11.9	0.0	1.5	793%
Trout Creek AM	7890	1-Jun	0	0.0	0.0		
Fish Creek SNOTEL	7660	1-Jun	40	19.9	0.0	9.1	219%
Govt Corrals AM	7400	1-Jun	0	0.0	0.0		
Silvies SNOTEL	6990	1-Jun	0	0.0	0.0	0.0	
Buckskin Lower SNOTEL	6915	1-Jun	0	0.0	0.0	0.0	
V Lake AM	6600	1-Jun	0	0.0	0.0		
Disaster Peak SNOTEL	6500	1-Jun	0	0.0	0.0	0.0	
Hart Mountain AM	6430	1-Jun	0	0.0	0.0		
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0	
Lamance Creek SNOTEL	6000	1-Jun	0	0.0	0.0	0.0	
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0	
Sheldon SCAN	5860	1-Jun	0	0.0	0.0	0.0	
Rock Springs SNOTEL	5290	1-Jun	0	0.0	0.0	0.0	
Starr Ridge SNOTEL	5250	1-Jun	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0	

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					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Owyhee R nr Rome	2000 cfs	** Observed	May 23	**	May 6
Owyhee R nr Rome	1000 cfs	Jun 6	Jun 15	Jun 24	May 18
Owyhee R nr Rome	500 cfs	Jun 24	Jul 2	Jul 11	Jun 2

UPPER JOHN DAY BASIN					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
John Day R at Service Creek	Average Daily Flow on Aug. 1st	235	415	595	271

UPPER DESCHUTES AND CROOKED BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Crane Prairie Inflow *	Date of Peak	** Observed	May 16	**	May 25
Crane Prairie Inflow	Peak Flow	** Observed	558	**	403
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	320	355	390	269
Prineville Reservoir Inflow	150 cfs	** Observed	May 29	**	May 30
Prineville Reservoir Inflow	80 cfs	Jun 2	Jun 12	Jul 20	June 7
Whychus Creek nr Sisters	100 cfs	Aug 12	Sep 1	Sep 26	August 16

** Observed values are based on preliminary data and may change

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>
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
South Umpqua R nr Brockway *	90 cfs	Aug 17	Sep 1	Sep 11	August 8
South Umpqua R at Tiller	140 cfs	Jul 18	Aug 2	Aug 12	July 11
South Umpqua R at Tiller	90 cfs	Aug 7	Aug 22	Sep 6	August 1
South Umpqua R at Tiller	60 cfs	Sep 1	Sep 21	Oct 11	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>
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
Deep Ck ab Adel	100 cfs	Jun 24	Jul 7	Jul 18	June 17
Honey Ck nr Plush	100 cfs	** Observed	May 29	**	May 16
Honey Ck nr Plush	50 cfs	Jun 3	Jun 10	Jun 17	June 4
Twentymile Ck nr Adel	50 cfs	Jun 5	Jun 30	Jul 23	May 30
Twentymile Ck nr Adel	10 cfs	Jul 13	Jul 28	Aug 17	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>
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
Silvies R nr Burns	400 cfs	** Observed	May 19	**	May 21
Silvies R nr Burns	200 cfs	** Observed	May 28	**	June 2
Silvies R nr Burns	100 cfs	Jun 6	Jun 17	Jun 28	June 13
Silvies R nr Burns	50 cfs	Jun 25	Jul 6	Jul 17	July 3
Donner Und Blitzen R nr Frenchglen	200 cfs	Jun 5	Jun 18	Jul 1	June 20
Donner Und Blitzen R nr Frenchglen	100 cfs	Jun 26	Jul 8	Jul 21	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.

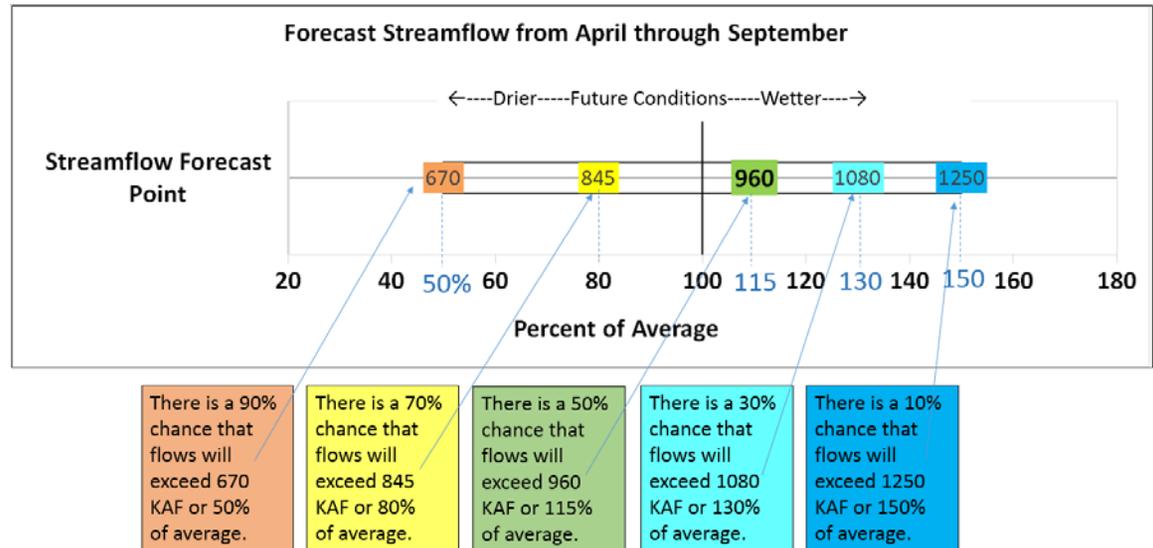
30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance 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 Burnt River Hereford will be less than 41 KAF between April 1 and Sept 30. There is also a 50% chance that actual streamflow volume will be greater than 41 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 31 KAF (from the 70 percent exceedance forecast). There is a 30% chance of receiving less than 31 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 17.4 KAF (from the 90 percent exceedance forecast). There is 10% chance of receiving less than 17.4 KAF.

Grande Ronde, Powder, Burnt And Innaha Basins Summary for January 1, 2017

		Forecast Exceedance Probabilities for Risk Assessment *						
Streamflow Forecasts January 1, 2017		←-----Drier-----Future Conditions-----Wetter-----→						
Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	Average (KAF)	
Burnt River Hereford	FEB-JUL	32	48	59	116%	70	86	51
	APR-SEP	17.4	31	41	117%	50	64	35

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 50 KAF (from the 30 percent exceedance forecast). There is a 30% chance of receiving more than 50 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 64 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 64 KAF.

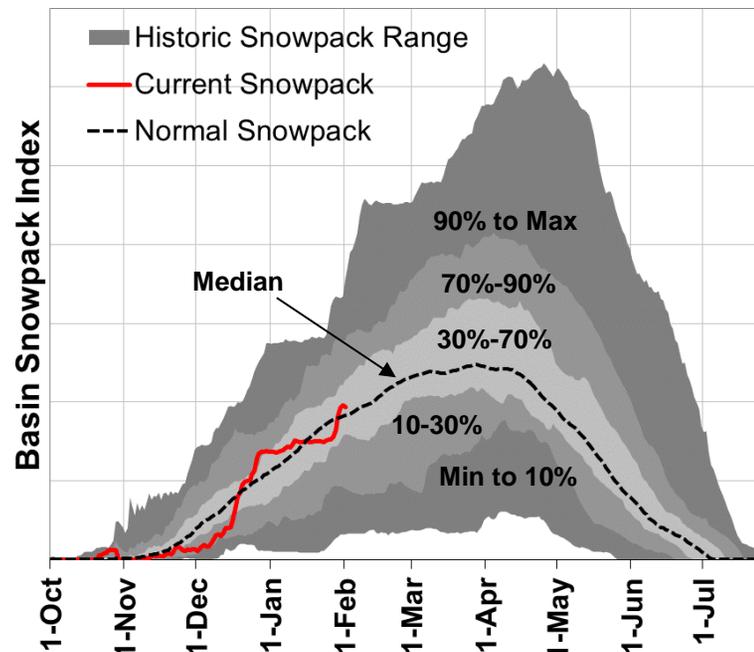
Interpreting Snowpack Plots

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 for the basin. This gives users important context about the current year and historic variability 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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