



United States  
Department of  
Agriculture

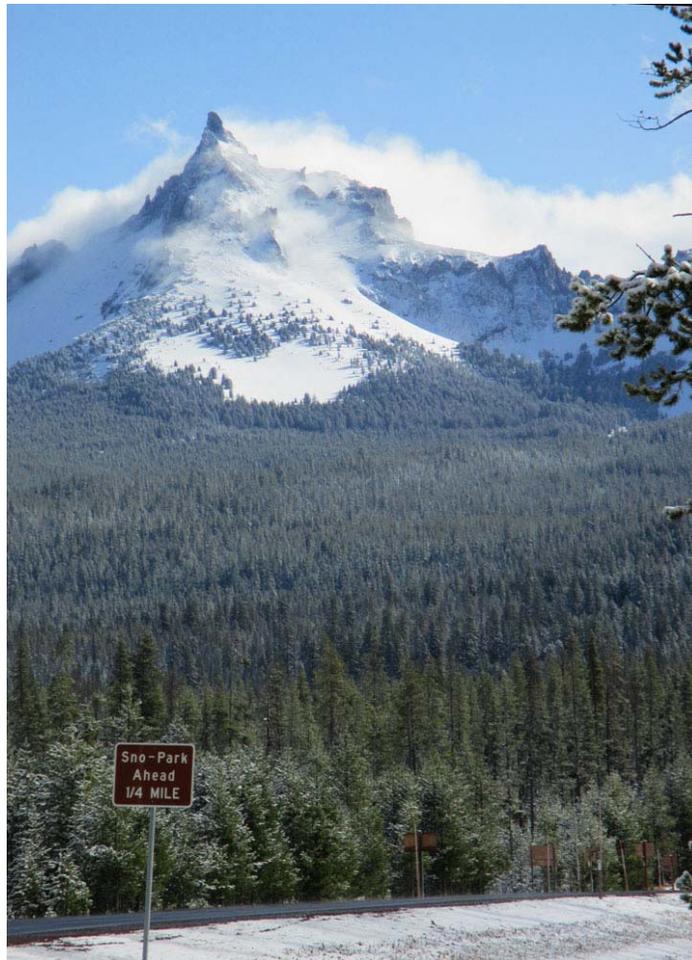


Natural Resources  
Conservation  
Service

# Oregon Basin Outlook Report

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April 1, 2015



**A snow-capped Mt. Thielsen illustrates the scarce snowpack in all but the highest elevations of Oregon this winter.**

*Photo courtesy of Scott Robbins (Oregon NRCS)*

**Due to an unusually warm winter, Oregon continues to experience record low snowpack levels. As of April 1, measurable snow is primarily limited to the highest elevations of the state (illustrated by the above photo of Mt. Thielsen taken on March 31). Record low April 1 snowpack levels were measured at 76% of Oregon's snow monitoring sites, and only 52 out of 147 sites across the state recorded any snow at all. Summer streamflow is expected to be well below normal and water shortages are likely throughout the state.**

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# General Outlook

April 1, 2015

## SUMMARY

As winter draws to a close, the snowpack in the mountains of Oregon is at record low levels and limited water supplies are expected this summer. Warm winter temperatures and heavy, but brief, spurts of mountain rainfall shaped this winter into an unusual one, resulting in the lowest state-wide snowpack on record. As of April 1, 76% of Oregon's long-term snow monitoring sites were at the lowest snowpack levels on record. While in a typical year most sites would be near their peak snowpack on April 1, more than half of all snowpack measurements across the state recorded bare ground on April 1.

Since the water year began on October 1, mountain precipitation has been near normal or slightly below normal across Oregon, even though January through March were generally warm and dry months. This means that almost the entire season's worth of precipitation fell in the short window of October through December. Since January, there were many days of sunshine and many weeks of above freezing temperatures in Oregon's mountains. In between these unseasonable dry spells, a few powerful storms brought scant amounts of mountain snow but mostly these storms delivered rain to the mountains. Winter rainfall increased reservoir storage for Oregon's major irrigation reservoirs in many parts of the state, which will help provide some buffer from the meager snow year. However, other reservoirs, such as Lake Owyhee and Drews Reservoir, are still experiencing a large deficit of water storage with significantly below normal snowmelt expected.

The lack of snow will have a major impact on summertime streamflows, which are expected to be well below normal throughout the state. Water users that depend on unregulated streamflow should brace for limited water supplies this season. As of April 1, Governor Brown has declared a drought state of emergency for Malheur and Lake Counties, with more counties to follow soon. The U.S. Drought Monitor has designated most of Oregon in a drought condition, with the southeastern third of the state listed in extreme drought condition:

<http://droughtmonitor.unl.edu/>. NOAA's [Climate Prediction Center](http://climatepredictioncenter.noaa.gov/) is calling for warm and dry conditions over the next 3 months. With such an unusual year on hand, Oregon NRCS has compiled drought assistance information on the following website: <http://1.usa.gov/1IDgKut>.

## SNOWPACK

In a typical year, April 1 marks the transition from the winter snow accumulation months to the spring snowmelt season; this transition is referred to as the seasonal snowpack peak. This year, the snowpack peaked much earlier than normal and at 40% to 90% below typical peak levels. Warm temperatures and a few rounds of heavy rainfall in February washed away much of the low elevation snowpack. At many monitoring sites in the Cascade Mountains, snow was on the ground for only a few weeks for the entire winter. As of April 1, only 52 out of 147 snow monitoring sites in Oregon had any measurable snow; and these sites are all well below normal. Throughout the state, 76% of the long term snow monitoring sites set a new record low for April 1 snowpack. Many of these snow records date back to the 1950's. In summary, Oregon's mountains currently lack the widespread seasonal snowpack that typically accumulates each winter and contributes to streamflow in the spring and summer months.

Snowpack across the state ranges from 8% to 32% of normal as of April 1. In northeastern Oregon, mountain temperatures were often cold enough to receive snow and retain the snowpack between the infrequent storms this winter. However, the snowpack in this region is still only 32% of normal as of April 1. Most of the basins across the rest of Oregon are 15% of normal or less. The snowpack monitoring sites that do have measurable snow are at the highest elevations and almost all of these sites are experiencing either their lowest or second lowest snowpack on record.

## **PRECIPITATION**

Since the water year began on October 1, Oregon's mountains have received near average to slightly below average amounts of precipitation. The total amount of precipitation that usually falls between October 1 and April 1 had mostly fallen by the first of December. The first few months of the water year brought several rounds of strong storm systems; most of these storms, known as atmospheric rivers, originated in the tropics bringing with them warm temperatures and heavy precipitation. Until January, the eastern half of Oregon remained cold enough (albeit still warmer than usual) for precipitation to fall as snow but the more temperate western half of Oregon received mostly rain. In late December, a cold air mass coupled with ample moisture brought the most significant mountain snowfall of the water year for the entire state. Had the temperatures remained cold enough this season, the state-wide snowpack would be near normal.

Most of the state has remained warm and relatively dry since the first of January. With a few exceptions, the precipitation that fell after January was mainly rain. The first half of March saw sunshine and warm temperatures, while the latter half brought a return to winter, with cooler mountain temperatures and some snowfall in the Cascades. The month of March ended with below normal precipitation across Oregon, which caused the overall snowpack deficit to increase.

## **RESERVOIRS**

Winter brought enough moisture to boost most of the major irrigation reservoirs in northern, central and southwestern Oregon up to near average levels for this time of year. However, there are several reservoirs across the state, such as Drews and Cottonwood reservoirs in the Harney basin and Lake Owyhee, that are still well below average for this time of year. While many reservoirs are currently storing near normal amounts of water, the record low snowpack in the mountains will greatly reduce the amount of snowmelt runoff that reservoir operators typically depend on to maintain reservoir storage during the summer months.

## **STREAMFLOW**

March streamflow was below normal for most of Oregon's rivers, which was quite a change from February when streams were flowing above normal. The unusually warm months of January and February combined with rain in the mountains caused rivers to receive a surge of rain and snowmelt during February. Most of Oregon's low elevation snow was lost during this period and those areas remain snow-free. The lack of snow on April 1 means that streamflows will be well below normal levels this summer. Given that most of Oregon's snowpack has melted or begun to melt earlier than normal, many snowmelt-driven streamflow peaks have already come and gone during February and March. Water users depending on unregulated streamflow for irrigation will likely experience shortages this summer, especially if the rest of spring brings warm and dry weather.

A summary of streamflow forecasts for Oregon follows:

<b>STREAM</b>	<b>Median Forecast (April through September)</b>	
	<b>Volume (Acre-Feet)</b>	<b>Percent of Average</b>
Owyhee Reservoir Inflow	99,000	24
Grande Ronde R at Troy	680,000	52
Umatilla R at Pendleton	109,000	71
Deschutes R at Benham Falls	385,000	79
Willamette R at Salem	3,610,000	76
Rogue R at Raygold	555,000	69
Upper Klamath Lake Inflow	186,000	39
Silvies R nr Burns	15,800	17

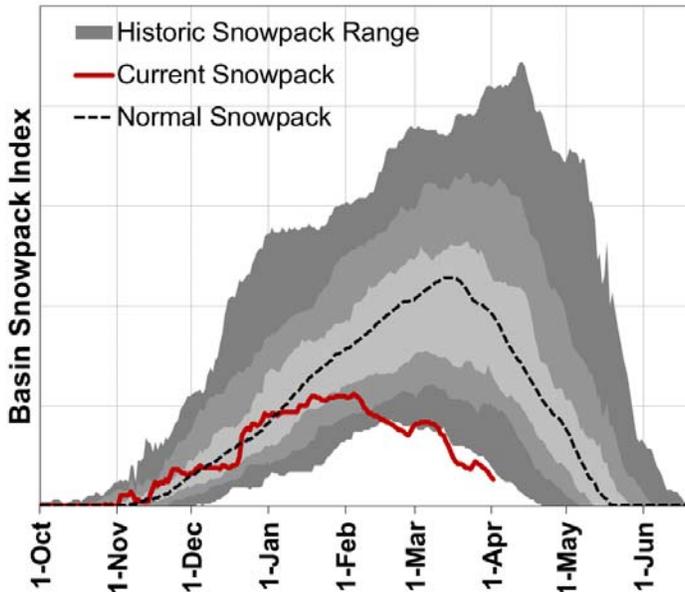
Some of these forecasts assume that normal weather conditions will occur from now to the end of the forecast period. This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.



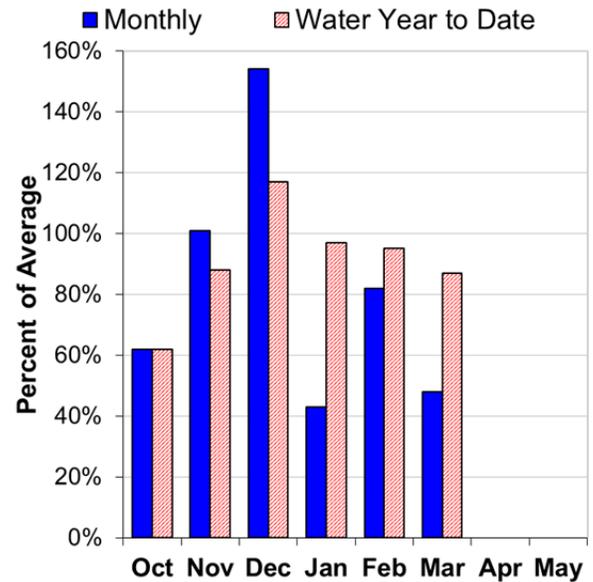
# Owyhee and Malheur Basins

April 1, 2015

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 10% of normal. This is significantly lower than last month when the snowpack was 40% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 40% to 70% below typical peak snowpack levels. As of April 1, 34 out of the 43 sites in the basin were snow-free.

### PRECIPITATION

March precipitation was 48% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 87% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of April 1, storage at major reservoirs in the basin ranges from 39% of average at Lake Owyhee Reservoir to 88% of average at Beulah Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 18% to 38% of average. Overall, forecasts decreased slightly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Owyhee And Malheur Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Owyhee R nr Rome	APR-JUL	7.1	31	58	17%	92	157	345
	APR-SEP	11.1	39	67	18%	103	169	365
Owyhee R bl Owyhee Dam <sup>2</sup>	APR-JUL	27	54	77	21%	105	153	375
	APR-SEP	42	73	99	24%	129	180	405
Malheur R nr Drewsey	APR-JUL	9.8	18.8	27	36%	36	52	75
	APR-SEP	11.1	20	28	38%	38	54	74
NF Malheur R at Beulah	APR-JUL	17.4	24	29	52%	34	43	56

\* 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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Beulah	38.1	32.7	43.5	60.0
Bully Creek	15.7	15.7	23.8	30.0
Lake Owyhee	192.5	170.2	495.8	715.0
Warm Springs	46.7	46.5	113.8	191.0

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
East Little Owyhee Basin	2	21%	61%
South Fork Owyhee Basin	6	24%	59%
Upper Malheur Basin	4	5%	52%
Upper Owyhee Basin	5	24%	61%

## Owyhee And Malheur Basins Summary for April 1, 2015

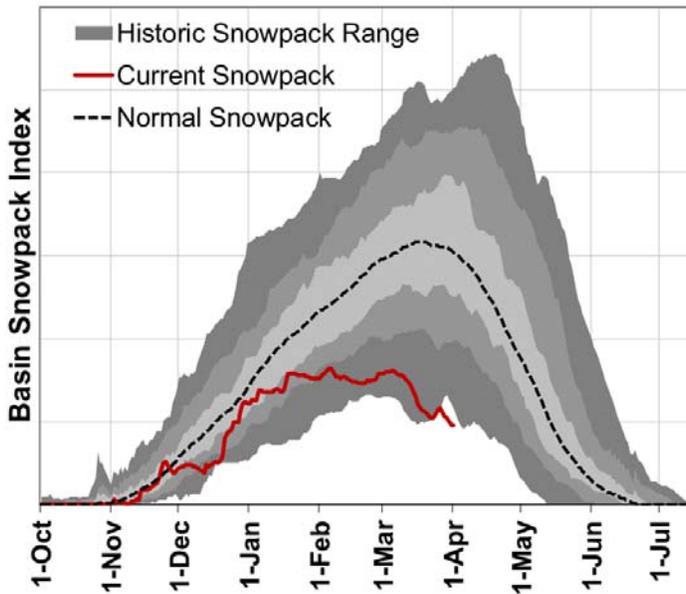
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Granite Peak SNOTEL	8543	1-Apr	17	6.3	13.2	21.2	30%
Trout Creek AM	7890	1-Apr	0	0.0	10.2	12.7	0%
Toe Jam SNOTEL	7700	1-Apr	9	3.7	12.6		
Govt Corrals AM	7400	1-Apr	0	0.0	10.7	15.0	0%
Jack Creek Upper SNOTEL	7250	1-Apr	19	7.9	12.3	16.7	47%
Dobson Creek Snow Course	7084	1-Apr	31	13.0	18.4	27.2	48%
Reynolds-Dobson Divide SC	7064	1-Apr	17	7.6	18.2	24.2	31%
Fawn Creek SNOTEL	7000	1-Apr	11	4.2	12.5	15.8	27%
Merritt Mountain - AM	7000	1-Apr	0	0.0	0.2	5.5	0%
Buckskin Lower SNOTEL	6915	1-Apr	0	0.0	4.8	8.5	0%
Jack Creek, Lower Snow Course	6800	30-Mar	0	0.0	0.8	0.8	0%
Reynolds West Fork #2 SC	6798	1-Apr	30	11.6	18.7	23.9	49%
Gold Creek Snow Course	6707	30-Mar	0	0.0	0.4	2.0	0%
Big Bend SNOTEL	6700	1-Apr	0	0.0	2.2	7.7	0%
Fry Canyon SNOTEL	6700	1-Apr	0	0.0			
Fry Canyon Snow Course	6700	30-Mar	0	0.0	0.5	4.8	0%
Laurel Draw SNOTEL	6697	1-Apr	0	0.0	4.2	8.6	0%
Columbia Basin - AM	6650	1-Apr	0	0.0	0.0	7.6	0%
Red Canyon AM	6600	30-Mar	0	0.0		4.1	0%
Louse Canyon AM	6530	30-Mar	0	0.0		3.2	0%
South Mtn. SNOTEL	6500	1-Apr	0	0.0	7.0	17.3	0%
Succor Creek AM	6310	30-Mar	0	0.0		8.0	0%
Quinn Ridge AM	6270	1-Apr	0	0.0		0.0	
Taylor Canyon SNOTEL	6200	1-Apr	0	0.0	0.0	1.3	0%
Blue Mountain Spring SNOTEL	5870	1-Apr	3	1.2	10.9	15.9	8%
Vaught Ranch AM	5850	1-Apr	0	0.0		0.0	
Barney Creek (New) Snow Course	5830	30-Mar	0	0.0	3.2		
Buck Pasture AM	5740	30-Mar	0	0.0		0.0	
Lookout Butte AM	5740	30-Mar	0	0.0		0.0	
Mud Flat SNOTEL	5730	1-Apr	0	0.0	0.0	2.5	0%
Battle Creek AM	5710	1-Apr	0	0.0		0.0	
Boulder Creek AM	5710	30-Mar	0	0.0		0.5	0%
Democrat Creek Snow Course	5686	1-Apr	3	2.0	0.7	6.2	32%
Reynolds Creek SNOTEL	5600	1-Apr	0	0.0	0.0	0.1	0%
Bull Basin AM	5460	1-Apr	0	0.0		0.0	
Dooley Mountain Snow Course	5440	30-Mar	0	0.0	2.1	8.0	0%
Call Meadows AM	5380	1-Apr	0	0.0		1.2	0%
Bully Creek AM	5300	30-Mar	0	0.0		0.0	
Rock Springs SNOTEL	5290	1-Apr	0	0.0	0.0	0.9	0%
Lake Creek R.S. SNOTEL	5240	1-Apr	0	0.0	2.3	8.6	0%
Taylor Butte SNOTEL	5030	1-Apr	0	0.0	0.1	3.0	0%
Flag Prairie AM	4720	1-Apr	0	0.0		0.0	
Eldorado Pass Snow Course	4630	30-Mar	0	0.0	0.0	0.0	



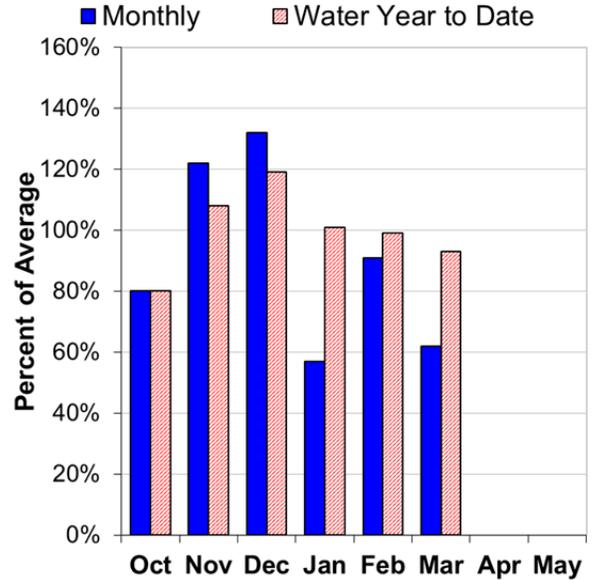
# Grande Ronde, Powder, Burnt and Innaha Basins

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 32% of normal. This is significantly lower than last month when the snowpack was 53% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 40% to 60% below typical peak snowpack levels. There are six long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack levels. One of these record lows occurred at the Little Alps snow course, which has been measured since 1959.

### PRECIPITATION

March precipitation was 62% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 93% of average.

### RESERVOIR

As of April 1, storage at major reservoirs in the basin ranges from 71% of average at Phillips Lake Reservoir to 184% of average at Wallowa Lake Reservoir.

### STREAMFLOW FORECAST

As of April 1, the majority of summer streamflow forecasts in the basin range from 20% to 60% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Grande Ronde, Powder, Burnt And Imnaha Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
		←-----Drier-----Future Conditions-----Wetter-----→						
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	<b>30-Yr Avg (KAF)</b>
Burnt R nr Hereford	APR-JUL	0.68	3.4	6.4	19%	10.4	17.9	33
	APR-SEP	0.94	3.9	7.1	20%	11.3	19.2	35
Deer Ck nr Sumpter	APR-JUL	1.91	3.2	4.3	28%	5.5	7.7	15.4
Powder R nr Sumpter	APR-JUL	8.9	13.9	18.0	34%	23	30	53
	APR-SEP	9.3	14.4	18.6	34%	23	31	54
Wolf Ck Reservoir Inflow <sup>2</sup>	APR-JUN	1.77	2.9	3.9	25%	5.0	6.9	15.8
Pine Ck nr Oxbow	APR-JUL	20	34	45	29%	58	80	157
	APR-SEP	26	42	55	34%	69	94	163
Imnaha R at Imnaha	APR-JUL	70	119	153	60%	187	235	255
	APR-SEP	78	131	166	59%	200	255	280
Catherine Ck nr Union	APR-JUL	20	26	31	52%	36	44	60
	APR-SEP	22	29	34	53%	39	47	64
Lostine R nr Lostine	APR-JUL	72	80	85	80%	90	98	106
	APR-SEP	77	86	92	80%	98	107	115
Bear Ck nr Wallowa	APR-SEP	40	47	51	78%	55	62	65
Grande Ronde R at Troy <sup>1</sup>	APR-JUL	405	535	630	52%	735	905	1220
	APR-SEP	445	580	680	52%	790	970	1310

\* 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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Phillips Lake	30.0	27.6	42.0	73.5
Thief Valley	13.8	13.7	15.5	17.4
Unity	24.9	24.6	20.6	25.2
Wallowa Lake	31.2	22.8	17.0	37.5
Wolf Creek	6.2	5.3	5.3	10.4

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Burnt Basin	4	11%	69%
Imnaha Basin	5	71%	110%
Lower Grande Ronde Basin	5	37%	109%
Powder Basin	11	50%	100%
Upper Grande Ronde Basin	8	38%	101%
Wallowa Basin	7	66%	118%

## Grande Ronde, Powder, Burnt And Innaha Basins Summary for April 1, 2015

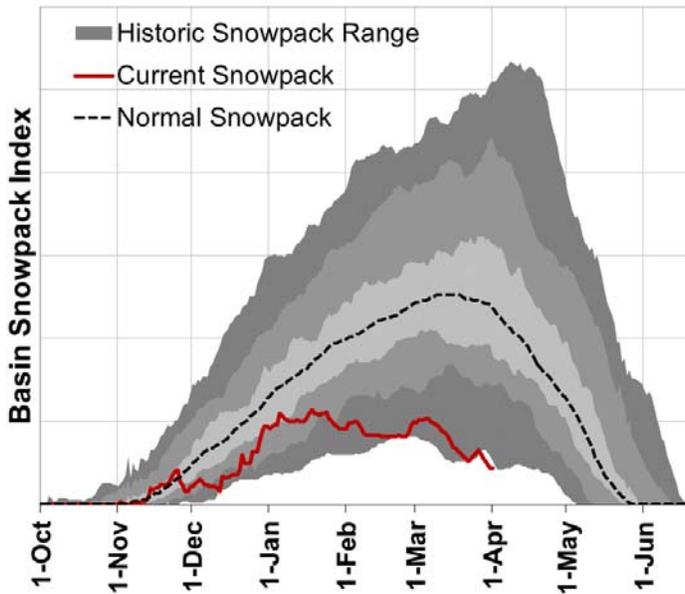
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Mirror Lake AM	8120	30-Mar	144	60.2	80.9	64.9	93%
Mt. Howard SNOTEL	7910	1-Apr	27	12.2	23.3	15.5	79%
Aneroid Lake #2 SNOTEL	7400	1-Apr	37	14.6	24.1	24.1	61%
Standley AM	7360	30-Mar	55	23.4	39.3	32.4	72%
Anthony Lake (Rev) Snow Course	7160	27-Mar	45	18.1	26.5	24.5	74%
TV Ridge AM	7050	1-Apr	12	5.2	17.9	17.8	29%
Little Alps Snow Course	6360	27-Mar	14	4.4	12.0	13.6	32%
Big Sheep AM	6230	1-Apr	25	10.8	20.6	24.2	45%
Bear Saddle SNOTEL	6180	1-Apr	12	5.4	13.5	22.3	24%
Placer Creek Snow Course	5860	29-Mar	19	7.9	6.8	16.4	48%
Bourne SNOTEL	5850	1-Apr	2	0.2	12.1	14.7	1%
Barney Creek (New) Snow Course	5830	30-Mar	0	0.0	3.2		
Moss Springs SNOTEL	5760	1-Apr	31	13.5	30.4	25.1	54%
Taylor Green SNOTEL	5740	1-Apr	6	2.8	18.5	19.6	14%
Boulder Creek AM	5710	30-Mar	0	0.0		0.5	0%
Spruce Springs SNOTEL	5700	1-Apr	0	0.0	16.8	13.8	0%
Wolf Creek SNOTEL	5630	1-Apr	15	4.9	14.6	16.8	29%
Milk Shakes SNOTEL	5580	1-Apr	45	17.1	39.9		
West Branch SNOTEL	5560	1-Apr	13	4.5	20.1	21.0	21%
Touchet SNOTEL	5530	1-Apr	13	6.2	28.5	30.1	21%
Eilertson Meadows SNOTEL	5510	1-Apr	0	0.0	4.2	6.7	0%
Dooley Mountain Snow Course	5440	30-Mar	0	0.0	2.1	8.0	0%
Gold Center SNOTEL	5410	1-Apr	1	0.2	4.2	3.9	5%
Schneider Meadows SNOTEL	5400	1-Apr	26	12.6	22.5	26.5	48%
Beaver Reservoir SNOTEL	5150	1-Apr	0	0.0	9.9	8.6	0%
Tipton SNOTEL	5150	1-Apr	5	2.3	9.8	11.6	20%
Thorson Cabin #2 Snow Course	5100	28-Mar	0	0.0	4.9		
High Ridge SNOTEL	4920	1-Apr	16	7.3	20.3	20.7	35%
County Line SNOTEL	4830	1-Apr	0	0.0	0.0	0.5	0%
Eldorado Pass Snow Course	4630	30-Mar	0	0.0	0.0	0.0	
Little Antone (Alt.) Snow Course	4560	27-Mar	0	0.0	4.0	6.8	0%
Bowman Springs SNOTEL	4530	1-Apr	0	0.0	2.2	5.5	0%
Sourdough Gulch SNOTEL	4000	1-Apr	0	0.0	0.0	0.0	



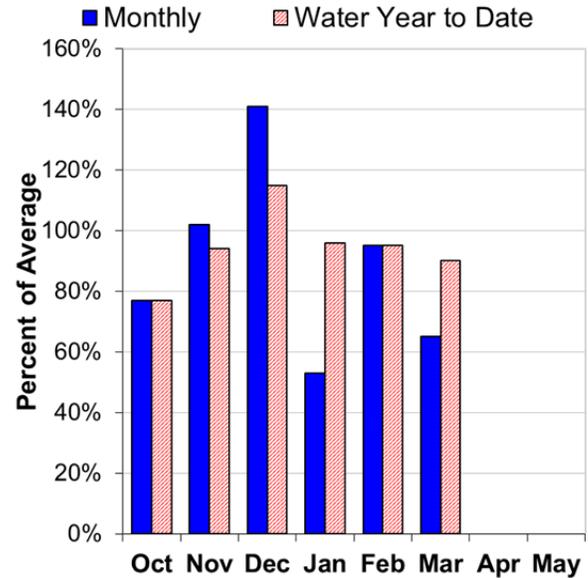
# Umatilla, Walla Walla, and Willow Basins

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 19% of normal. This is significantly lower than last month when the snowpack was 41% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 50% to 70% below typical peak snowpack levels. As of April 1, five of the 10 sites in the basin were snow-free.

### PRECIPITATION

March precipitation was 65% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 90% of average.

### RESERVOIR

As of April 1, storage at major reservoirs in the basin ranges from 75% of average at Cold Springs Reservoir to 107% of average at Willow Creek Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 39% to 76% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Umatilla, Walla Walla And Willow Basins Summary for April 1, 2015

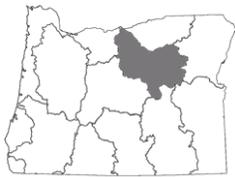
<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
SF Walla Wall R nr Milton-Freewater	APR-JUL	27	35	40	74%	45	53	54
	APR-SEP	36	44	50	76%	56	64	66
Umatilla R ab Meacham Ck nr Gibbon	APR-JUL	33	44	53	72%	62	78	74
	APR-SEP	38	49	58	73%	68	83	80
Umatilla R at Pendleton	APR-JUL	54	84	104	71%	124	154	147
	APR-SEP	58	88	109	71%	130	160	153
McKay Ck nr Pilot Rock	APR-SEP	6.7	12.3	17.0	55%	22	32	31
Butter Ck nr Pine City	APR-JUL	1.68	2.8	3.7	39%	4.8	6.6	9.4
	APR-SEP	1.79	2.9	3.8	39%	4.9	6.7	9.8
Willow Ck ab Willow Lake nr Heppner	APR-JUL	0.87	1.89	2.8	40%	3.9	5.8	7.0
Rhea Ck nr Heppner	APR-JUL	0.63	1.50	2.3	32%	3.3	5.0	7.1

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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Cold Springs	25.1	24.1	33.7	50.0
Mckay	49.5	64.7	50.8	73.8
Willow Creek	5.8	5.8	5.4	13.9

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Umatilla Basin	5	18%	66%
Walla Walla Basin	7	19%	75%

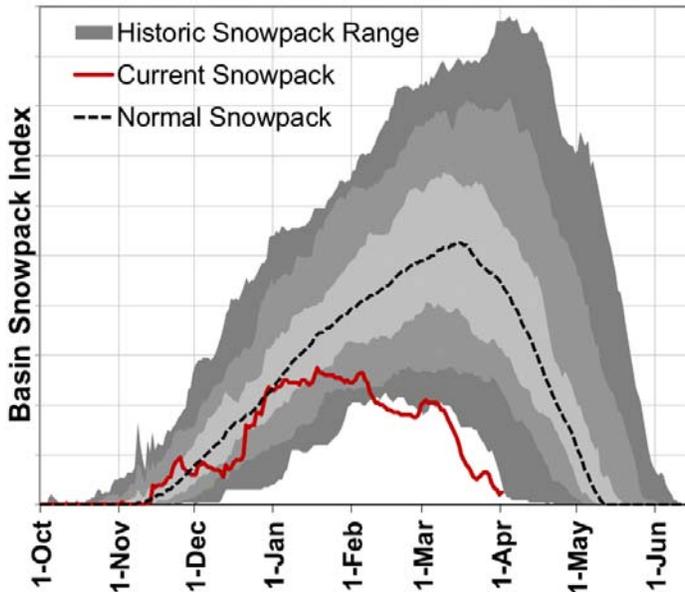
<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Snow Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>30-Yr Median</b>	<b>% of 30-Yr Median</b>
Arbuckle Mtn SNOTEL	5770	1-Apr	5	2.0	9.7	18.8	11%
Spruce Springs SNOTEL	5700	1-Apr	0	0.0	16.8	13.8	0%
Milk Shakes SNOTEL	5580	1-Apr	45	17.1	39.9	30.1	21%
Touchet SNOTEL	5530	1-Apr	13	6.2	28.5	30.1	21%
Madison Butte SNOTEL	5150	1-Apr	0	0.0	0.0	1.2	0%
Lucky Strike SNOTEL	4970	1-Apr	0	0.0	1.5	6.2	0%
High Ridge SNOTEL	4920	1-Apr	16	7.3	20.3	20.7	35%
Indian Ridge Snow Course	4908	30-Mar	8	3.0	22.0	20.7	35%
Bowman Springs SNOTEL	4530	1-Apr	0	0.0	2.2	5.5	0%
Emigrant Springs SNOTEL	3800	1-Apr	0	0.0	0.0	0.0	0%



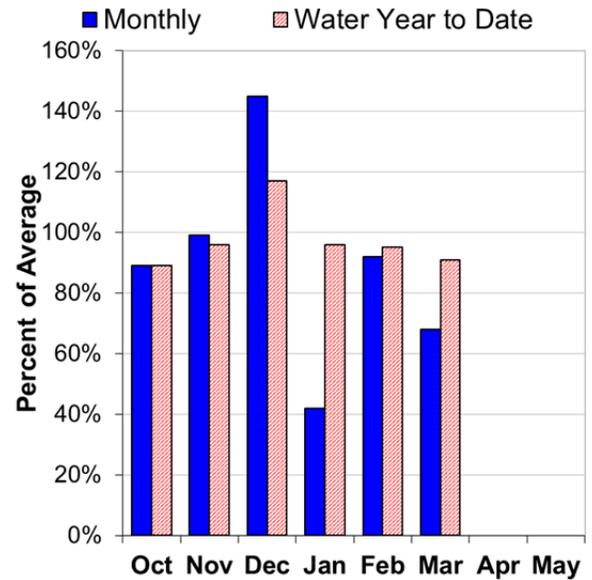
# John Day Basin

April 1, 2015

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 8% of normal. This is significantly lower than last month when the snowpack was 42% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 40% to 60% below typical peak snowpack levels. There are five long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack levels; two of which are snow-free for the first time on record (Derr & Snow Mountain SNOTEL sites).

### PRECIPITATION

March precipitation was 68% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 91% of average.

### STREAMFLOW FORECAST

As of April 1, the majority of summer streamflow forecasts in the basin range from 44% to 66% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## John Day Basin Summary for April 1, 2015

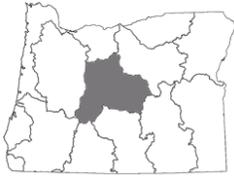
<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Strawberry Ck nr Prairie City	APR-JUL	2.9	4.1	5.0	62%	6.0	7.6	8.1
	APR-SEP	3.3	4.5	5.5	63%	6.6	8.3	8.8
Mountain Ck nr Mitchell	APR-JUL	0.26	0.63	0.98	20%	1.39	2.1	4.8
	APR-SEP	0.26	0.63	0.98	20%	1.40	2.2	4.9
Camas Ck nr Ukiah	APR-JUL	12.2	18.6	23	68%	27	34	34
	APR-SEP	12.1	18.6	23	66%	27	34	35
MF John Day R at Ritter	APR-JUL	28	43	54	45%	67	88	121
	APR-SEP	30	45	56	44%	69	91	126
NF John Day R at Monument	APR-JUL	152	220	270	47%	330	420	580
	APR-SEP	156	225	275	46%	335	430	600

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

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Lower John Day Basin	6	0%	37%
North Fork John Day Basin	8	28%	78%
Upper John Day Basin	6	2%	53%

## John Day Basin Summary for April 1, 2015

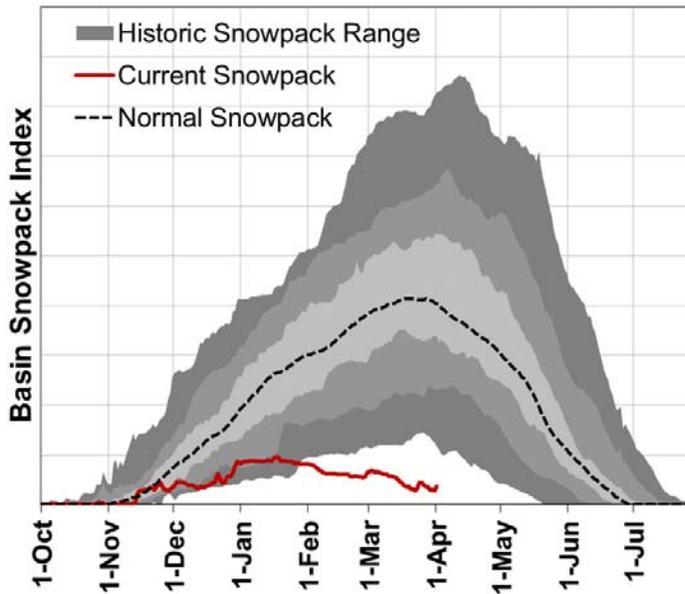
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Anthony Lake (Rev) Snow Course	7160	27-Mar	45	18.1	26.5	24.5	74%
Little Alps Snow Course	6360	27-Mar	14	4.4	12.0	13.6	32%
Snow Mountain SNOTEL	6230	1-Apr	0	0.0	5.7	12.2	0%
Blue Mountain Spring SNOTEL	5870	1-Apr	3	1.2	10.9	15.9	8%
Derr Snow Course	5860	1-Apr	0	0.0	2.4	7.6	0%
Bourne SNOTEL	5850	1-Apr	2	0.2	12.1	14.7	1%
Derr. SNOTEL	5850	1-Apr	0	0.0	8.4	12.0	0%
Barney Creek (New) Snow Course	5830	30-Mar	0	0.0	3.2		
Arbuckle Mtn SNOTEL	5770	1-Apr	5	2.0	9.7	18.8	11%
Ochoco Meadows SNOTEL	5430	1-Apr	0	0.0	0.4	9.5	0%
Gold Center SNOTEL	5410	1-Apr	1	0.2	4.2	3.9	5%
Starr Ridge SNOTEL	5250	1-Apr	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Apr	0	0.0	2.3	8.6	0%
Ochoco Meadows Snow Course	5190	1-Apr	0	0.0	3.1	8.8	0%
Madison Butte SNOTEL	5150	1-Apr	0	0.0	0.0	1.2	0%
Tipton SNOTEL	5150	1-Apr	5	2.3	9.8	11.6	20%
Lucky Strike SNOTEL	4970	1-Apr	0	0.0	1.5	6.2	0%
County Line SNOTEL	4830	1-Apr	0	0.0	0.0	0.5	0%
Marks Creek Snow Course	4580	1-Apr	0	0.0	0.0	0.0	
Little Antone (Alt.) Snow Course	4560	27-Mar	0	0.0	4.0	6.8	0%



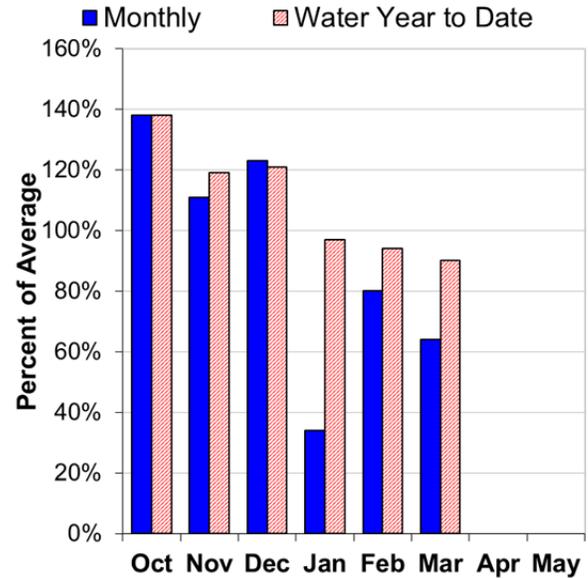
# Upper Deschutes and Crooked Basins

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 13% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 50% to 90% below typical peak snowpack levels. There are 10 long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack; three of which were snow-free for the first time on record.

### PRECIPITATION

March precipitation was 64% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 90% of average.

### RESERVOIR

Reservoir storage across the basin is currently near average to above average. As of April 1, storage at major reservoirs in the basin ranges from 95% of average at Prineville Reservoir to 156% of average at Crescent Lake Reservoir.

### STREAMFLOW FORECAST

As of April 1, streamflow forecasts for the main stem of the Deschutes River range from 60% to 79% of average and are higher than elsewhere in the basin due to groundwater contribution. Streamflow forecasts for the rest of the basin range from 16% to 62% of normal. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Upper Deschutes And Crooked Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Deschutes R bl Snow Ck	APR-JUL	7.9	14.3	18.6	62%	23	29	30
	APR-SEP	18.2	26	31	60%	36	44	52
Crane Prairie Reservoir Inflow <sup>2</sup>	APR-JUL	14.9	23	29	52%	35	43	56
	APR-SEP	27	37	44	50%	51	61	88
Crescent Lake Inflow <sup>2</sup>	APR-JUL	2.2	3.3	4.3	29%	5.4	7.2	15.0
	APR-SEP	1.88	3.2	4.4	25%	5.7	8.0	17.4
Little Deschutes R nr La Pine	APR-JUL	10.3	15.5	19.7	31%	24	32	63
	APR-SEP	10.5	16.3	21	30%	26	35	69
Deschutes R at Benham Falls <sup>2</sup>	APR-JUL	230	245	255	80%	265	280	320
	APR-SEP	355	375	385	79%	400	420	485
Wychus Ck nr Sisters	APR-JUL	17.7	20	22	63%	24	26	35
	APR-SEP	24	27	29	62%	31	34	47
Prineville Reservoir Inflow <sup>2</sup>	APR-JUL	3.7	10.6	17.3	17%	26	41	102
	APR-SEP	3.1	9.7	16.2	16%	24	40	102
Ochoco Reservoir Inflow <sup>2</sup>	APR-JUL	1.77	4.0	6.0	29%	8.4	12.8	21
	APR-SEP	1.42	3.4	5.3	27%	7.5	11.6	20

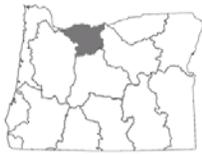
\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume  
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Crane Prairie	54.9	54.7	42.1	55.3
Crescent Lake	75.4	73.3	48.4	86.9
Ochoco	33.6	29.1	30.2	47.5
Prineville	123.9	148.7	130.4	153.0
Wickiup	199.0	198.3	189.2	200.0

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Little Deschutes Basin	4	17%	66%
Upper Crooked Basin	5	0%	38%
Upper Deschutes Basin	14	13%	73%

## Upper Deschutes And Crooked Basins Summary for April 1, 2015

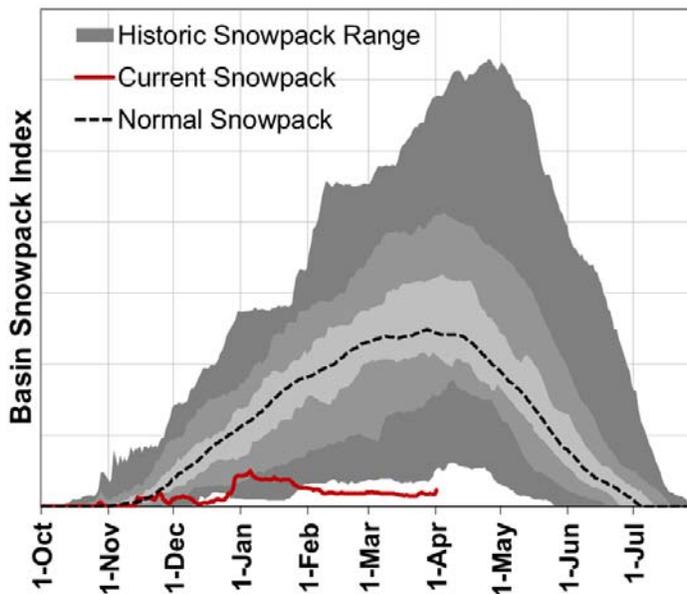
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
New Dutchman #3 Snow Course	6320	31-Mar	46	17.0	45.0	44.8	38%
Snow Mountain SNOTEL	6230	1-Apr	0	0.0	5.7	12.2	0%
Derr Snow Course	5860	1-Apr	0	0.0	2.4	7.6	0%
Derr. SNOTEL	5850	1-Apr	0	0.0	8.4	12.0	0%
Three Creeks Meadow SNOTEL	5690	1-Apr	1	0.1	11.8	18.4	1%
Summit Lake SNOTEL	5610	1-Apr	29	10.4	24.5	37.1	28%
Bald Peter Snow Course	5600	31-Mar	0	0.0	24.2	31.4	0%
Irish Taylor SNOTEL	5540	1-Apr	26	8.8	28.3	37.2	24%
Tangent Snow Course	5470	31-Mar	0	0.0	9.4	18.1	0%
Ochoco Meadows SNOTEL	5430	1-Apr	0	0.0	0.4	9.5	0%
Ochoco Meadows Snow Course	5190	1-Apr	0	0.0	3.1	8.8	0%
Racing Creek Snow Course	5160	31-Mar	0	0.0	11.6	13.6	0%
Cascade Summit SNOTEL	5100	1-Apr	7	2.6	23.1	31.0	8%
Roaring River SNOTEL	4950	1-Apr	3	0.5	18.1	26.0	2%
New Crescent Lake SNOTEL	4910	1-Apr	0	0.0	2.4	5.4	0%
Chemult Alternate SNOTEL	4850	1-Apr	0	0.0	0.0	2.5	0%
Hogg Pass SNOTEL	4790	1-Apr	9	0.8	15.4	26.0	3%
Mckenzie SNOTEL	4770	1-Apr	5	1.1	28.8	37.4	3%
Marks Creek Snow Course	4580	1-Apr	0	0.0	0.0	0.0	
Hungry Flat Snow Course	4400	31-Mar	0	0.0	0.0	0.0	
Salt Creek Falls SNOTEL	4220	1-Apr	1	0.3	9.2	17.5	2%
Santiam Jct. SNOTEL	3740	1-Apr	5	0.5	1.7	9.8	5%



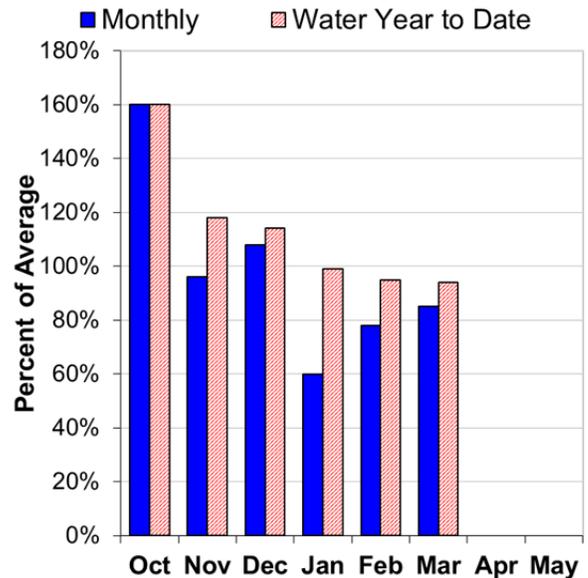
# Hood, Sandy, and Lower Deschutes Basins

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 11% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 75% to 90% below typical peak snowpack levels. There are five long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack; one of these records occurred at Bald Peter snow course, which was snow-free for the first time since measurement began in 1973. Normal April 1 snow water content for this site is 31.4 inches.

### PRECIPITATION

March precipitation was 85% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 94% of average.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 59% to 68% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Hood, Sandy And Lower Deschutes Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
WF Hood River nr Dee	APR-JUL	35	54	68	57%	81	101	120
	APR-SEP	47	68	82	59%	96	117	139
Hood R at Tucker Bridge	APR-JUL	92	114	130	58%	147	175	225
	APR-SEP	114	140	159	60%	179	210	265
Sandy R nr Marmot	APR-JUL	146	182	210	68%	235	280	310
	APR-SEP	179	220	245	68%	275	325	360

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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Clear Lake	5.4	6.6	4.4	11.9

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Lower Columbia - Sandy Basin	7	10%	84%
Lower Deschutes Basin	9	12%	81%
Middle Columbia - Hood Basin	8	12%	81%

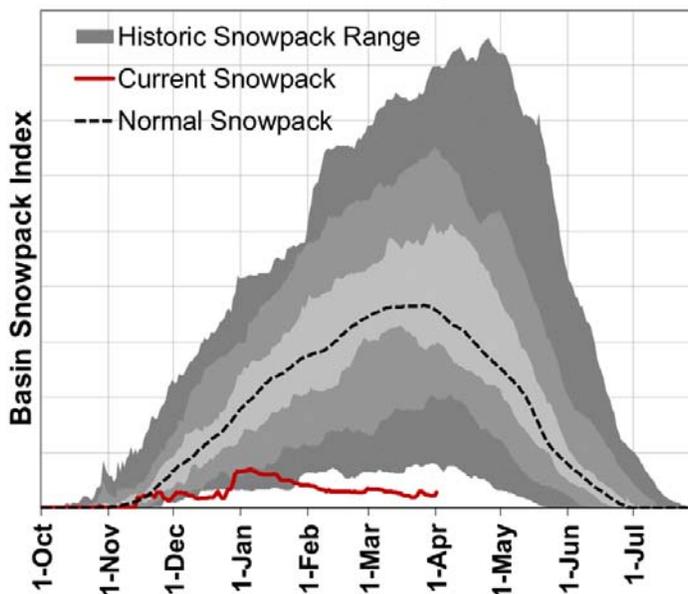
<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Snow Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>30-Yr Median</b>	<b>% of 30-Yr Median</b>
High Prairie Snow Course	6080	27-Mar	24	9.4	35.3	42.2	22%
Bald Peter Snow Course	5600	31-Mar	0	0.0	24.2	31.4	0%
Mt Hood Test Site SNOTEL	5370	1-Apr	38	14.9	56.0	60.2	25%
Racing Creek Snow Course	5160	31-Mar	0	0.0	11.6	13.6	0%
Red Hill SNOTEL	4410	1-Apr	8	1.6	40.5	45.7	4%
Mill Creek Meadow Snow Course	4400	31-Mar	0	0.0	7.6	10.8	0%
Surprise Lakes SNOTEL	4290	1-Apr	12	5.1	39.3	45.5	11%
Beaver Creek #2 Snow Course	4220	31-Mar	0	0.0	3.2	6.8	0%
Beaver Creek #1 Snow Course	4210	31-Mar	0	0.0	7.8	13.6	0%
Mud Ridge SNOTEL	4070	1-Apr	4	0.4	21.0	23.4	2%
Clear Lake SNOTEL	3810	1-Apr	0	0.0	6.9	10.4	0%
Blazed Alder SNOTEL	3650	1-Apr	4	0.9	19.1	25.6	4%
Clackamas Lake SNOTEL	3400	1-Apr	0	0.0	4.0	8.6	0%
Greenpoint SNOTEL	3310	1-Apr	0	0.0	5.7	15.6	0%
North Fork SNOTEL	3060	1-Apr	1	0.1	6.9	14.4	1%
South Fork Bull Run SNOTEL	2690	1-Apr	1	0.2	0.0	0.0	



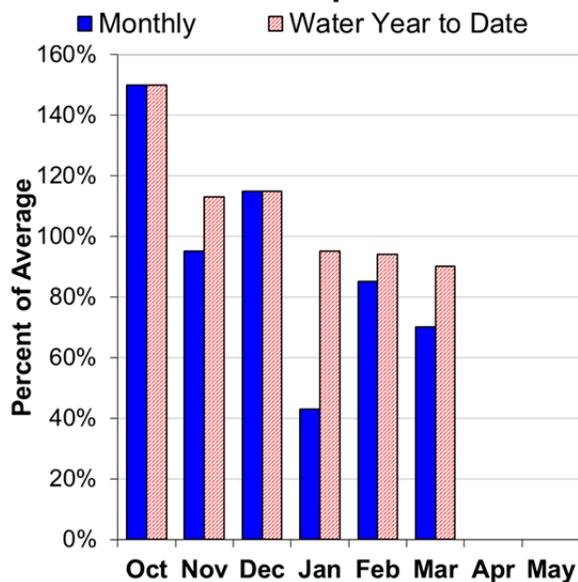
# Willamette Basin

April 1, 2015

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 8% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 75% to 90% below typical peak snowpack levels. There are five long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack. As of April 1, 13 of the 26 sites in the basin were snow-free.

### PRECIPITATION

March precipitation was 70% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 90% of average.

### RESERVOIR

As of April 1, storage at major reservoirs in the basin ranges from 51% of average at Cougar Reservoir to 110% of average at Timothy Lake Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 65% to 85% of average. Overall, forecasts decreased slightly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Willamette Basin Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Hills Creek Reservoir Inflow <sup>1,2</sup>	APR-JUN	74	141	171	70%	200	270	245
	APR-JUL	85	157	190	69%	225	295	275
	APR-SEP	113	188	220	70%	255	330	315
MF Willamette R bl NF nr Oakridge <sup>1,2</sup>	APR-JUN	210	370	445	71%	520	680	625
	APR-JUL	240	415	495	71%	575	745	695
	APR-SEP	305	485	565	72%	645	830	790
Lookout Point Reservoir Inflow <sup>1,2</sup>	APR-JUN	200	375	455	70%	535	710	650
	APR-JUL	235	425	510	70%	595	780	725
	APR-SEP	310	500	585	71%	675	865	825
Fall Creek Reservoir Inflow <sup>1,2</sup>	APR-JUN	4.1	50	71	69%	92	138	103
	APR-JUL	4.3	53	75	69%	97	145	109
	APR-SEP	8.5	57	79	70%	101	149	113
Cottage Grove Lake Inflow <sup>1,2</sup>	APR-JUN	7.9	19.6	27	68%	35	57	40
	APR-JUL	8.4	21	28	68%	36	59	41
	APR-SEP	9.3	22	29	67%	38	60	43
Dorena Lake Inflow <sup>1,2</sup>	APR-JUN	28	64	85	65%	109	172	130
	APR-JUL	31	68	88	65%	112	175	136
	APR-SEP	33	70	91	65%	115	178	139
McKenzie R bl Trail Bridge	APR-JUL	182	200	215	83%	230	255	260
	APR-SEP	250	270	290	84%	305	335	345
Cougar Lake Inflow <sup>1,2</sup>	APR-JUN	93	132	151	82%	172	225	185
	APR-JUL	106	147	168	82%	190	245	205
	APR-SEP	127	171	193	82%	215	275	235
Blue Lake Inflow <sup>1,2</sup>	APR-JUN	31	52	64	80%	76	108	80
	APR-JUL	32	54	66	79%	79	112	84
	APR-SEP	35	57	69	80%	82	115	86
McKenzie R nr Vida <sup>1</sup>	APR-JUN	480	625	695	84%	775	955	830
	APR-JUL	575	730	810	84%	890	1080	970
	APR-SEP	755	925	1010	85%	1100	1310	1190
Detroit Lake Inflow <sup>1,2</sup>	APR-JUN	205	295	335	71%	380	470	470
	APR-JUL	240	335	380	72%	425	525	530
	APR-SEP	305	410	460	75%	505	610	610
Little North Santiam R nr Mehama <sup>1</sup>	APR-JUN	33	72	90	72%	108	147	125
	APR-JUL	34	76	95	71%	114	157	133
	APR-SEP	43	85	104	74%	123	165	141
North Santiam R at Mehama <sup>1</sup>	APR-JUN	305	425	480	72%	535	655	665
	APR-JUL	345	475	535	72%	595	720	740
	APR-SEP	430	565	625	74%	685	815	840

## Willamette Basin Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Green Peter Lake Inflow <sup>1,2</sup>	APR-JUN	116	174	205	77%	240	320	265
	APR-JUL	125	187	220	79%	255	335	280
	APR-SEP	140	205	235	80%	270	355	295
Foster Lake Inflow <sup>1,2</sup>	APR-JUN	205	325	390	78%	460	635	500
	APR-JUL	225	355	420	79%	495	675	530
	APR-SEP	250	380	450	80%	525	710	565
South Santiam R at Waterloo <sup>2</sup>	APR-JUN	255	345	415	79%	490	610	525
	APR-JUL	280	375	445	80%	520	645	555
	APR-SEP	310	405	475	81%	550	675	590
Willamette R at Salem <sup>1,2</sup>	APR-JUN	1650	2510	2960	75%	3440	4640	3950
	APR-JUL	1850	2760	3230	75%	3740	5000	4310
	APR-SEP	2170	3120	3610	76%	4140	5420	4730
Scoggins Reservoir Inflow <sup>2</sup>	APR-JUL	4.9	9.8	13.1	99%	16.4	21	13.2
Oak Grove Fk ab Powerplant	APR-JUL	67	78	86	75%	94	107	115
	APR-SEP	92	106	116	75%	127	143	155
Clackamas R above Three Lynx	APR-JUL	240	295	330	73%	365	420	450
	APR-SEP	305	360	400	75%	440	495	535
Clackamas R at Estacada	APR-JUL	330	410	465	74%	520	600	625
	APR-SEP	410	495	550	75%	605	690	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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Blue River	34.9	61.7	56.4	85.5
Cottage Grove	16.6	22.4	19.3	29.8
Cougar	60.3	142.2	118.6	155.2
Detroit	242.5	385.5	335.5	300.7
Dorena	30.4	57.2	44.4	70.5
Fall Creek	44.8	90.2	81.6	115.5
Fern Ridge	69.5	85.7	73.1	109.6
Foster	21.6	24.2	30.9	29.7
Green Peter	278.9	343.5	332.6	268.2
Hills Creek	174.4	237.4	205.6	200.2
Lookout Point	165.0	345.6	296.7	337.0
Timothy Lake	58.0	58.6	52.7	61.7
Henry Hagg Lake	50.9	51.8	50.0	53.0

## Willamette Basin Summary for April 1, 2015

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	11	11%	79%
McKenzie Basin	6	9%	62%
Middle Fork Willamette Basin	7	14%	63%
North Santiam Basin	4	2%	39%
South Santiam Basin	4	2%	36%

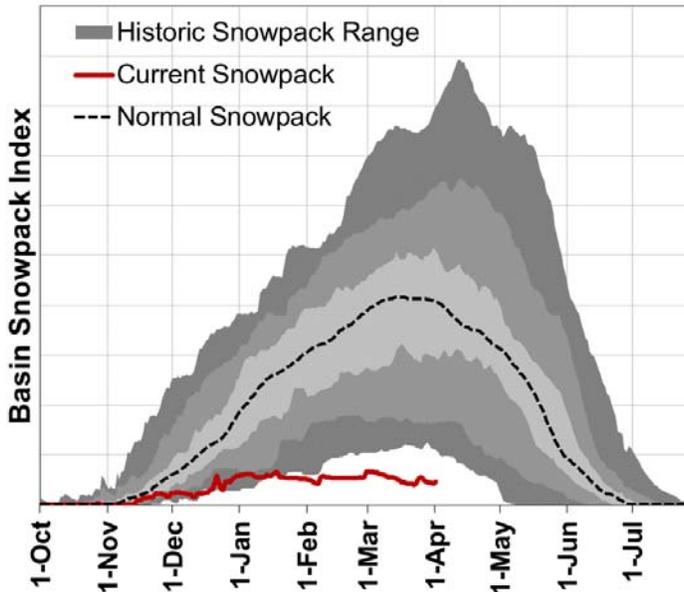
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Summit Lake SNOTEL	5610	1-Apr	29	10.4	24.5	37.1	28%
Irish Taylor SNOTEL	5540	1-Apr	26	8.8	28.3	37.2	24%
Cascade Summit SNOTEL	5100	1-Apr	7	2.6	23.1	31.0	8%
Roaring River SNOTEL	4950	1-Apr	3	0.5	18.1	26.0	2%
Holland Meadows SNOTEL	4930	1-Apr	2	0.4	3.4	21.1	2%
Hogg Pass SNOTEL	4790	1-Apr	9	0.8	15.4	26.0	3%
Mckenzie SNOTEL	4770	1-Apr	5	1.1	28.8	37.4	3%
Bear Grass SNOTEL	4720	1-Apr	6	0.6	28.8		
Beaver Creek #2 Snow Course	4220	31-Mar	0	0.0	3.2	6.8	0%
Salt Creek Falls SNOTEL	4220	1-Apr	1	0.3	9.2	17.5	2%
Beaver Creek #1 Snow Course	4210	31-Mar	0	0.0	7.8	13.6	0%
Mud Ridge SNOTEL	4070	1-Apr	4	0.4	21.0	23.4	2%
Little Meadows SNOTEL	4020	1-Apr	2	0.4	14.6	23.3	2%
Clear Lake SNOTEL	3810	1-Apr	0	0.0	6.9	10.4	0%
Santiam Jct. SNOTEL	3740	1-Apr	5	0.5	1.7	9.8	5%
Daly Lake SNOTEL	3690	1-Apr	0	0.0	1.5	7.7	0%
Marys Peak (Rev.) Snow Course	3580	30-Mar	0	0.0	0.2	2.5	0%
Jump Off Joe SNOTEL	3520	1-Apr	2	0.5	0.0	7.8	6%
Peavine Ridge SNOTEL	3420	1-Apr	0	0.0	3.8	8.9	0%
Clackamas Lake SNOTEL	3400	1-Apr	0	0.0	4.0	8.6	0%
Smith Ridge SNOTEL	3270	1-Apr	0	0.0	0.0		
Saddle Mountain SNOTEL	3110	1-Apr	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Apr	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Apr	0	0.0	0.0	5.4	0%
Seine Creek SNOTEL	2060	1-Apr	0	0.0	0.0	0.0	
Miller Woods SNOTEL	420	1-Apr	0	0.0	0.0		



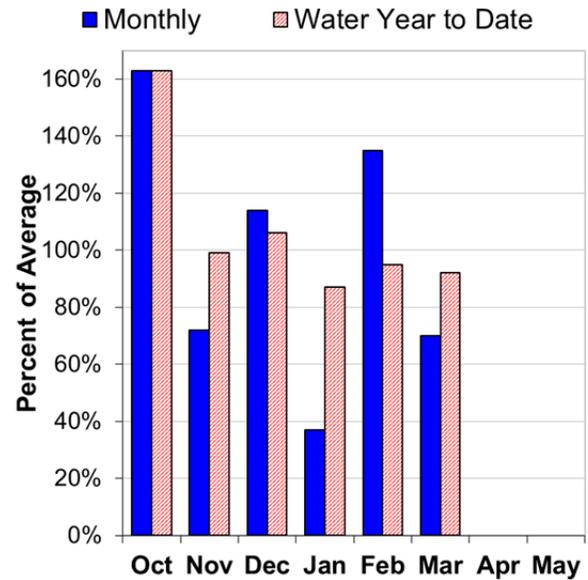
# Rogue and Umpqua Basins

April 1, 2015

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 14% of normal. This is slightly lower than last month when the snowpack was 19% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 70% to 90% below typical peak snowpack levels. There are eight long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack. Both Billie Creek Divide SNOTEL (records began in 1979) and Ski Bowl Road snow course (records began in 1966) were snow free for the first time on record. Both sites typically have over 20 inches of snow water on April 1.

### PRECIPITATION

March precipitation was 70% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 92% of average.

### RESERVOIR

As of April 1, storage at major reservoirs in the basin ranges from 54% of average at Hyatt Prairie Reservoir to 104% of average at Lost Creek Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the Umpqua basin from 70% to 80% of average, while the forecasts in the Rogue Basin range from 47% to 73% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Rogue And Umpqua Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Hyatt Reservoir Inflow <sup>2</sup>	APR-JUL	0.34	0.79	1.20	33%	1.69	2.6	3.6
South Umpqua R at Tiller	APR-JUL	89	124	150	78%	179	225	193
	APR-SEP	97	131	158	79%	187	235	200
Cow Ck nr Azalea <sup>2</sup>	APR-JUL	0.17	6.2	10.3	70%	14.4	20	14.7
	APR-SEP	0.71	6.9	11.1	70%	15.3	21	15.9
South Umpqua R nr Brockway	APR-JUL	87	210	290	74%	370	495	390
	APR-SEP	103	225	310	76%	395	515	410
North Umpqua R at Winchester	APR-JUL	385	525	620	80%	715	855	775
	APR-SEP	470	615	710	80%	805	950	890
Lost Creek Lk Inflow <sup>2</sup>	APR-JUL	285	340	375	72%	410	465	520
	APR-SEP	365	430	470	73%	510	575	645
Rogue R at Raygold <sup>2</sup>	APR-JUL	260	380	460	68%	540	660	675
	APR-SEP	345	470	555	69%	640	765	805
Rogue R at Grants Pass <sup>2</sup>	APR-JUL	255	390	485	67%	580	715	725
	APR-SEP	315	465	565	67%	665	815	845
Applegate Lake Inflow <sup>2</sup>	APR-JUL	10.8	19.4	27	25%	35	49	109
	APR-SEP	13.0	22	30	26%	39	54	115
Sucker Ck bl Little Grayback Ck	APR-JUL	9.9	18.2	25	45%	33	47	55
	APR-SEP	11.8	21	28	47%	36	51	59
Illinois R nr Kerby	APR-JUL	43	75	101	54%	132	184	188
	APR-SEP	46	78	105	54%	136	188	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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Applegate	37.3	47.8	44.0	75.2
Emigrant Lake	30.4	23.9	33.6	39.0
Fish Lake	4.6	4.7	5.2	8.0
Fourmile Lake	7.4	6.7	7.5	16.1
Howard Prairie	26.2	35.4	41.9	60.0
Hyatt Prairie	6.5	8.4	12.1	16.1
Lost Creek	276.1	287.3	266.7	315.0

## Rogue And Umpqua Basins Summary for April 1, 2015

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	5	8%	19%
Middle Rogue Basin	8	6%	21%
North Umpqua Basin	7	19%	50%
South Umpqua Basin	10	1%	10%
Upper Rogue Basin	11	15%	38%

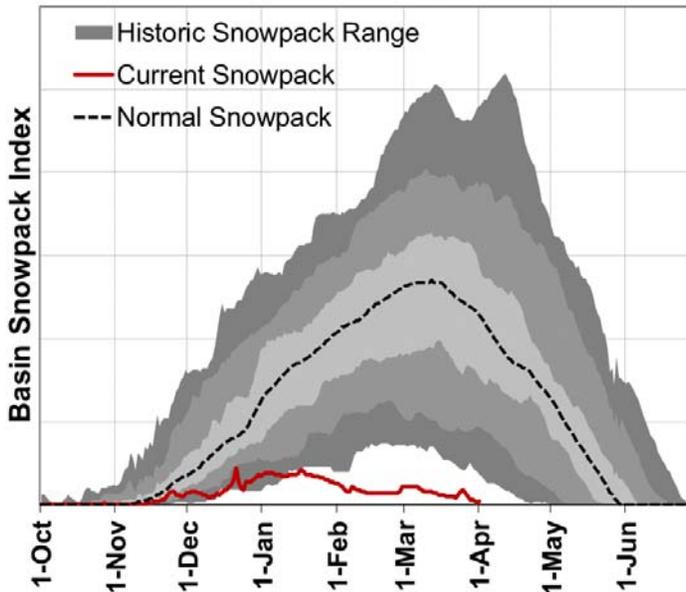
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Park H.Q. Rev Snow Course	6570	31-Mar	56	23.3	37.0	59.6	39%
Caliban (Alt.) Snow Course	6500	30-Mar	9	4.2	10.9	30.6	14%
Mount Ashland Switchback SC	6430	30-Mar	4	1.3	4.8	32.4	4%
Ski Bowl Road Snow Course	6070	30-Mar	0	0.0	2.6	23.6	0%
Big Red Mountain SNOTEL	6050	1-Apr	9	4.2	5.4	27.8	15%
Annie Springs SNOTEL	6010	1-Apr	29	11.5	20.0	41.0	28%
Fourmile Lake SNOTEL	5970	1-Apr	3	0.8	10.9	28.9	3%
Cold Springs Camp SNOTEL	5940	1-Apr	1	0.2	8.7	28.8	1%
Sevenmile Marsh SNOTEL	5700	1-Apr	2	0.3	11.5	31.8	1%
Summit Lake SNOTEL	5610	1-Apr	29	10.4	24.5	37.1	28%
Billie Creek Divide SNOTEL	5280	1-Apr	0	0.0	3.3	21.2	0%
Diamond Lake SNOTEL	5280	1-Apr	0	0.0	2.2	10.2	0%
Bigelow Camp SNOTEL	5130	1-Apr	0	0.0	0.7	10.8	0%
Beaver Dam Creek Snow Course	5120	31-Mar	0	0.0	0.3	8.0	0%
King Mountain 1 Snow Course	4760	1-Apr	0	0.0	0.6	3.2	0%
Deadwood Junction Snow Course	4660	31-Mar	0	0.0	0.0	3.0	0%
Fish Lk. SNOTEL	4660	1-Apr	0	0.0	0.4	6.8	0%
Howard Prairie Snow Course	4580	31-Mar	0	0.0	0.0	4.2	0%
Howard Prairie SNOTEL	4580	1-Apr	0	0.0	0.0		
Siskiyou Summit Rev. Snow Course	4560	30-Mar	0	0.0	0.0	2.5	0%
Red Butte 1 Snow Course	4460	1-Apr	2	0.2	0.9	7.2	3%
King Mountain SNOTEL	4340	1-Apr	0	0.0	0.4	0.5	0%
North Umpqua Snow Course	4200	2-Apr	0	0.0		5.4	0%
Red Butte 2 Snow Course	4050	1-Apr	0	0.0	0.0	1.0	0%
Trap Creek Snow Course	3830	2-Apr	0	0.0		4.5	0%
King Mountain 3 Snow Course	3680	1-Apr	0	0.0	0.0	0.0	
Silver Burn Snow Course	3680	31-Mar	0	0.0	0.0	7.5	0%
Red Butte 3 Snow Course	3500	1-Apr	0	0.0	0.0	0.0	
Toketee Airstrip SNOTEL	3240	1-Apr	0	0.0	0.0	0.0	
King Mountain 4 Snow Course	3050	1-Apr	0	0.0	0.0	0.0	
Red Butte 4 Snow Course	3000	1-Apr	0	0.0	0.0	0.0	



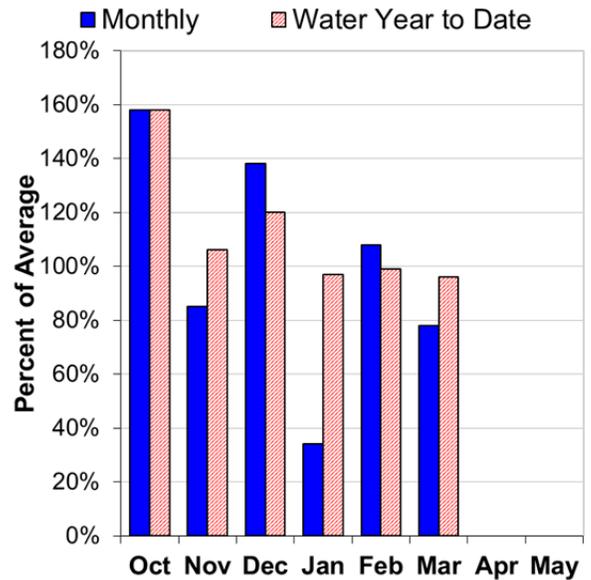
# Klamath Basin

April 1, 2015

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 13% of normal. This is slightly lower than last month when the snowpack was 17% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 70% to 90% below typical peak snowpack levels. There are five long-term snow monitoring sites in the basin that set new record lows for April 1 snowpack. One of these records occurred at Finley Corrals AM, which was snow-free for the first time since measurement began in 1958. Normal April 1 snow water content for this site is 13.0 inches.

### PRECIPITATION

March precipitation was 78% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 96% of average.

### RESERVOIR

As of April 1, storage at major reservoirs in the basin ranges from 19% of average at Clear Lake Reservoir to 114% of average at Upper Klamath Lake Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 32% to 46% of average. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Klamath Basin Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Clear Lake Inflow <sup>2</sup>	APR-JUL	0.64	3.3	14.6	46%	26	42	32
	APR-SEP	0.70	5.5	16.0	46%	26	42	35
Gerber Reservoir Inflow <sup>2</sup>	APR-MAY	0.13	0.39	3.8	29%	8.9	16.5	12.9
	APR-JUL	0.14	0.70	4.2	30%	9.1	16.3	14.0
	APR-SEP	0.14	0.58	4.6	32%	9.4	16.5	14.4
Sprague R nr Chiloquin	APR-JUL	13.4	45	66	35%	87	119	188
	APR-SEP	27	58	80	38%	102	133	210
Williamson R bl Sprague nr Chiloquin	APR-JUL	56	89	111	38%	133	166	295
	APR-SEP	96	131	155	44%	179	214	355
Upper Klamath Lake Inflow <sup>1,2</sup>	APR-JUL	43	110	141	35%	172	239	400
	APR-SEP	80	153	186	39%	219	292	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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Clear Lake, CA	45.9	54.0	245.0	513.3
Gerber	16.1	18.4	62.5	94.3
Upper Klamath Lake	483.9	419.1	424.5	523.7

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Lost Basin	3	0%	42%
Sprague Basin	4	4%	23%
Upper Klamath Lake Basin	8	16%	41%
Williamson River Basin	5	30%	51%

## Klamath Basin Summary for April 1, 2015

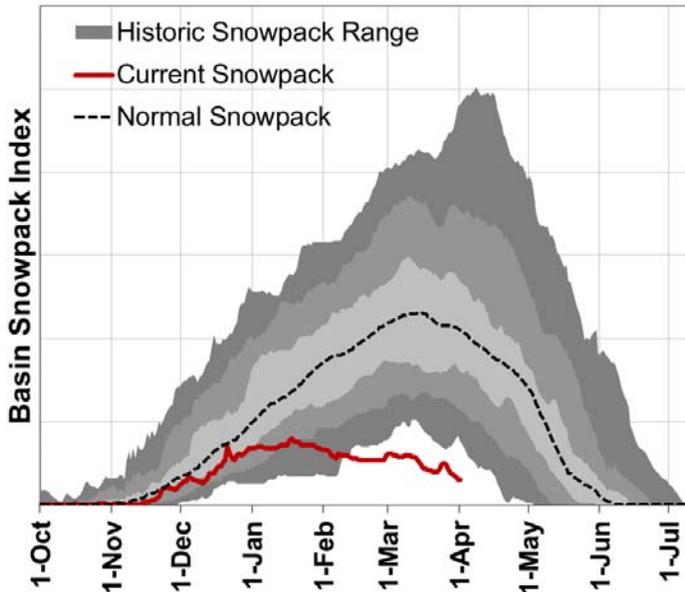
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Summer Rim SNOTEL	7080	1-Apr	3	1.4	6.9	16.4	9%
Swan Lake Mtn SNOTEL	6830	1-Apr	0	0.0	7.0		
Park H.Q. Rev Snow Course	6570	31-Mar	56	23.3	37.0	59.6	39%
Colvin Creek AM	6520	30-Mar	0	0.0		0.0	
Crazyman Flat SNOTEL	6180	1-Apr	0	0.0	2.0	13.1	0%
Ski Bowl Road Snow Course	6070	30-Mar	0	0.0	2.6	23.6	0%
Annie Springs SNOTEL	6010	1-Apr	29	11.5	20.0	41.0	28%
Finley Corrals AM	6000	30-Mar	0	0.0		13.0	0%
Fourmile Lake SNOTEL	5970	1-Apr	3	0.8	10.9	28.9	3%
Cold Springs Camp SNOTEL	5940	1-Apr	1	0.2	8.7	28.8	1%
Strawberry SNOTEL	5770	1-Apr	0	0.0	0.5	1.2	0%
Silver Creek SNOTEL	5740	1-Apr	0	0.0	0.0	7.2	0%
Quartz Mountain SNOTEL	5720	1-Apr	0	0.0	0.2	0.0	
Sevenmile Marsh SNOTEL	5700	1-Apr	2	0.3	11.5	31.8	1%
State Line AM	5690	4-Apr	0	0.0		0.7	0%
State Line SNOTEL	5680	1-Apr	0	0.0			
Sycan Flat AM	5580	30-Mar	0	0.0		0.4	0%
Sun Pass SNOTEL	5400	1-Apr	0	0.0	1.7		
Billie Creek Divide SNOTEL	5280	1-Apr	0	0.0	3.3	21.2	0%
Diamond Lake SNOTEL	5280	1-Apr	0	0.0	2.2	10.2	0%
Crowder Flat SNOTEL	5170	1-Apr	0	0.0	0.0	0.0	
Beaver Dam Creek Snow Course	5120	31-Mar	0	0.0	0.3	8.0	0%
Taylor Butte SNOTEL	5030	1-Apr	0	0.0	0.1	3.0	0%
Dog Hollow AM	4920	4-Apr	0	0.0		0.0	
Gerber Reservoir SNOTEL	4890	1-Apr	0	0.0	0.0	0.0	
Chemult Alternate SNOTEL	4850	1-Apr	0	0.0	0.0	2.5	0%
Deadwood Junction Snow Course	4660	31-Mar	0	0.0	0.0	3.0	0%
Fish Lk. SNOTEL	4660	1-Apr	0	0.0	0.4	6.8	0%
Howard Prairie SNOTEL	4580	1-Apr	0	0.0	0.0		
Howard Prairie Snow Course	4580	31-Mar	0	0.0	0.0	4.2	0%
Siskiyou Summit (Rev.) SC	4560	30-Mar	0	0.0	0.0	2.5	0%



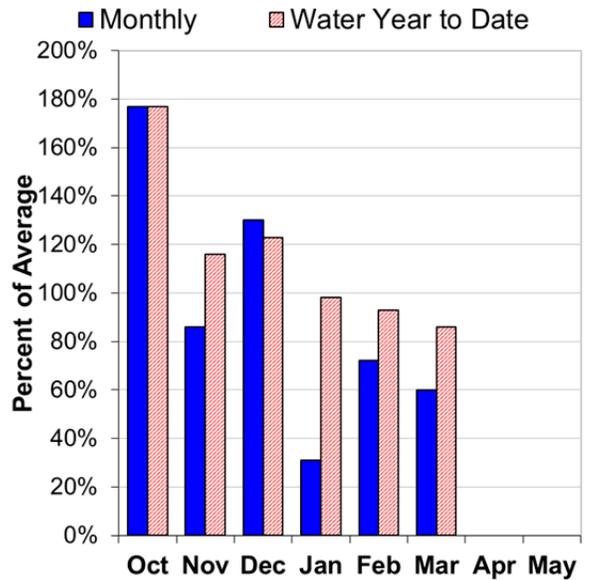
# Lake County and Goose Lake

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 9% of normal. This is significantly lower than last month when the snowpack was 22% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 60% to 80% below typical peak snowpack levels. Ten out of the 17 long-term snow monitoring sites in the basin measured the lowest April 1 snowpack on record; nine of these sites were snow-free for the first time on record and three of these records began in 1958. As of April 1, only Dismal Swamp and Summer Rim SNOTEL sites have measurable snow on the ground.

### PRECIPITATION

March precipitation was 60% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 86% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of April 1, storage at major reservoirs in the basin ranges from 30% of average at Drews Reservoir to 66% of average at Cottonwood Reservoir.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 26% to 43% of average. Overall, forecasts decreased significantly from last month's report. In the last 34 years, roughly 7 years had lower seasonal streamflow volumes than expected this year. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Lake County And Goose Lake Basins Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Twentymile Ck nr Adel	APR-JUL	0.75	2.5	4.3	25%	6.6	10.8	17.0
	APR-SEP	0.85	2.7	4.5	26%	6.8	11.0	17.4
Deep Ck ab Adel	APR-JUL	9.0	15.5	21	33%	27	38	63
	APR-SEP	9.6	16.4	22	34%	28	39	65
Honey Ck nr Plush	APR-JUL	1.03	2.5	3.8	27%	5.4	8.3	14.0
	APR-SEP	1.07	2.5	3.9	28%	5.5	8.4	14.1
Chewaucan R nr Paisley	APR-JUL	14.0	23	30	42%	38	52	71
	APR-SEP	15.5	25	32	43%	40	54	75

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

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Useable Capacity (KAF)</b>
Cottonwood	4.2	2.8	6.3	8.7
Drews	12.5	22.4	42.0	63.0

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Goose Lake Basin	5	17%	39%
Lake Abert Basin	3	3%	27%
Summer Lake Basin	13	9%	36%
Upper Pit Basin	3	0%	47%

## Lake County And Goose Lake Basins Summary for April 1, 2015

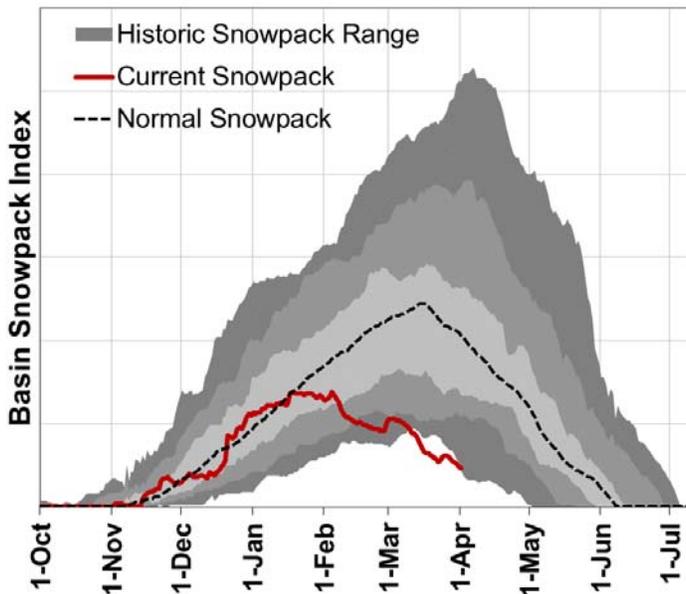
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Dismal Swamp SNOTEL	7360	1-Apr	27	11.0	15.3	28.4	39%
Summer Rim SNOTEL	7080	1-Apr	3	1.4	6.9	16.4	9%
Cedar Pass Snow Course	7050	31-Mar	0	0.0	7.4	14.8	0%
Cedar Pass SNOTEL	7030	1-Apr	0	0.0	10.1	17.9	0%
Barley Camp AM	6890	30-Mar	0	0.0		16.1	0%
Patton Meadows AM	6800	1-Apr	0	0.0	5.8	16.0	0%
Sherman Valley AM	6640	1-Apr	0	0.0	3.1	13.0	0%
Bear Flat Meadow AM	6580	30-Mar	0	0.0		11.8	0%
Colvin Creek AM	6520	30-Mar	0	0.0		0.0	
Hart Mountain AM	6430	1-Apr	0	0.0	0.0	0.0	
Rogger Meadow AM	6360	1-Apr	0	0.0	3.4	8.8	0%
Adin Mountains Snow Course	6190	30-Mar	0	0.0	0.6	12.2	0%
Adin Mtn SNOTEL	6190	1-Apr	0	0.0	3.6	11.3	0%
Crazyman Flat SNOTEL	6180	1-Apr	0	0.0	2.0	13.1	0%
Finley Corrals AM	6000	30-Mar	0	0.0		13.0	0%
Camas Creek #3 Snow Course	5860	30-Mar	0	0.0	0.8	11.0	0%
Sheldon SCAN	5860	1-Apr	0	0.0	0.0	0.0	
Strawberry SNOTEL	5770	1-Apr	0	0.0	0.5	1.2	0%
Cox Flat AM	5750	30-Mar	0	0.0		0.2	0%
Silver Creek SNOTEL	5740	1-Apr	0	0.0	0.0	7.2	0%
State Line Am (Ca) Snow Course	5690	4-Apr	0	0.0		0.7	0%
Sycan Flat AM	5580	30-Mar	0	0.0		0.4	0%
Crowder Flat SNOTEL	5170	1-Apr	0	0.0	0.0	0.0	



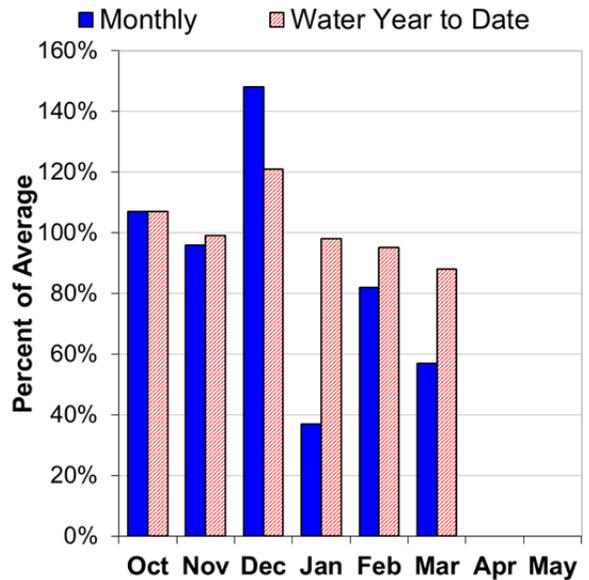
# Harney Basin

April 1, 2015

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of April 1, the basin snowpack was 16% of normal. This is significantly lower than last month when the snowpack was 50% of normal. The snowpack in this region peaked well below normal this winter. In general, SNOTEL sites in the basin peaked 40% to 70% below typical peak snowpack levels. Blue Mountain Spring and Snow Mountain SNOTEL sites both set new record lows for April 1 snowpack. Snow Mountain was snow free for the first time since records began in 1979. There are only three out of 23 sites in the basin with measurable snow on the ground as of April 1.

### PRECIPITATION

March precipitation was 57% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 88% of average.

### STREAMFLOW FORECAST

As of April 1, summer streamflow forecasts in the basin range from 12% to 56% of average. Overall, forecasts decreased significantly from last month's report. In the last 34 years, roughly 8 years had lower seasonal streamflow volumes than expected this year. Water managers in the basin should expect water shortages this summer and plan accordingly.

## Harney Basin Summary for April 1, 2015

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts April 1, 2015</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>30-Yr Avg (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Silvies R nr Burns	APR-JUL	1.75	8.2	15.2	17%	24	42	89
	APR-SEP	1.95	8.6	15.8	17%	25	43	92
Donner Und Blitzen R nr Frenchglen	APR-JUL	19.0	28	35	56%	42	55	62
	APR-SEP	22	31	38	56%	46	60	68
Trout Ck nr Denio	APR-JUL	0.01	0.35	0.86	11%	1.58	3.0	7.6
	APR-SEP	0.02	0.41	0.95	12%	1.71	3.2	8.0

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

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of 30-Year Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Alvord Lake Basin	4	28%	73%
Donner und Blitzen River Basin	3	35%	63%
Silvies River Basin	4	0%	37%
Upper Quinn Basin	5	10%	62%

<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Snow Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>30-Yr Median</b>	<b>% of 30-Yr Median</b>
Granite Peak SNOTEL	8543	1-Apr	17	6.3	13.2	21.2	30%
Trout Creek AM	7890	1-Apr	0	0.0	10.2	12.7	0%
Fish Creek SNOTEL	7660	1-Apr	38	17.0	22.8	27.4	62%
Govt Corrals AM	7400	1-Apr	0	0.0	10.7	15.0	0%
Oregon Canyon AM	7050	30-Mar	0	0.0		3.0	0%
Silvies SNOTEL	6990	1-Apr	0	0.0	7.4	15.6	0%
Pueblo Summit AM	6970	30-Mar	0	0.0		0.0	
Buckskin Lower SNOTEL	6915	1-Apr	0	0.0	4.8	8.5	0%
V Lake AM	6600	1-Apr	0	0.0	0.2	4.9	0%
Louse Canyon AM	6530	30-Mar	0	0.0		3.2	0%
Disaster Peak SNOTEL	6500	1-Apr	0	0.0	0.8	1.9	0%
Hart Mountain AM	6430	1-Apr	0	0.0	0.0	0.0	
Quinn Ridge AM	6270	1-Apr	0	0.0		0.0	
Snow Mountain SNOTEL	6230	1-Apr	0	0.0	5.7	12.2	0%
Lamance Creek SNOTEL	6000	1-Apr	0	0.0	0.5	6.6	0%
Blue Mountain Spring SNOTEL	5870	1-Apr	3	1.2	10.9	15.9	8%
Sheldon SCAN	5860	1-Apr	0	0.0	0.0	0.0	
Buck Pasture AM	5740	30-Mar	0	0.0		0.0	
Call Meadows AM	5380	1-Apr	0	0.0		1.2	0%
Rock Springs SNOTEL	5290	1-Apr	0	0.0	0.0	0.9	0%
Starr Ridge SNOTEL	5250	1-Apr	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Apr	0	0.0	2.3	8.6	0%
Buckskin Lake AM	5190	30-Mar	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

<b>OWYHEE AND MALHEUR BASINS</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i>			<i>LONG-TERM AVERAGE VALUE</i>
		<i>----- CHANCE OF EXCEEDING -----</i>			
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
Owyhee R nr Rome	2000 cfs	**Observed	Jan 21	**	<b>May 6</b>
Owyhee R nr Rome	1000 cfs	**Observed	Feb 13	**	<b>May 18</b>
Owyhee R nr Rome	500 cfs	**Observed	Feb 19	**	<b>Jun 2</b>

<b>UPPER JOHN DAY BASIN</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i>			<i>LONG-TERM AVERAGE VALUE</i>
		<i>----- CHANCE OF EXCEEDING -----</i>			
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
John Day R at Service Creek	Average Daily Flow on Aug. 1st	20	80	275	<b>271</b>

<b>UPPER DESCHUTES AND CROOKED BASINS</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i>			<i>LONG-TERM AVERAGE VALUE</i>
		<i>----- CHANCE OF EXCEEDING -----</i>			
		<i>90%</i>	<i>50%</i>	<i>10%</i>	
Crane Prairie Inflow *	Date of Peak	Apr 20	May 6	May 22	<b>May 25</b>
Crane Prairie Inflow	Peak Flow	191	320	450	<b>403</b>
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	112	146	180	<b>269</b>
Prineville Reservoir Inflow	113 cfs	Apr 16	May 7	May 28	<b>June 3</b>
Prineville Reservoir Inflow	75 cfs	Apr 22	May 13	Jun 3	<b>June 11</b>
Prineville Reservoir Inflow	50 cfs	Apr 30	May 23	Jun 15	<b>June 19</b>
Whychus Creek nr Sisters	100 cfs	Jul 6	Jul 29	Aug 21	<b>August 16</b>

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

<b>ROGUE AND UMPQUA BASINS</b>					
<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%	
South Umpqua R nr Brockway *	90 cfs	Jun 28	Jul 15	Aug 1	<b>August 8</b>
South Umpqua R at Tiller	140 cfs	May 31	Jun 20	Jul 10	<b>July 11</b>
South Umpqua R at Tiller	90 cfs	Jun 16	Jul 7	Jul 28	<b>August 1</b>
South Umpqua R at Tiller	60 cfs	Jul 4	Jul 29	Aug 23	<b>August 28</b>

\*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.

<b>LAKE COUNTY AND GOOSE LAKE BASINS</b>					
<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%	
Deep Ck ab Adel	100 cfs	**Observed	Mar 28	**	<b>June 17</b>
Honey Ck nr Plush	100 cfs	** Flow did not exceed this level **			<b>May 16</b>
Honey Ck nr Plush	50 cfs	** Flow did not exceed this level **			<b>June 4</b>
Twentymile Ck nr Adel	50 cfs	** Observed	Feb 11	**	<b>May 30</b>
Twentymile Ck nr Adel	10 cfs	** Observed	Apr 5	**	<b>July 7</b>

<b>HARNEY BASIN</b>					
<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%	
Silvies R nr Burns	400 cfs	** Observed	Feb 13	**	<b>May 21</b>
Silvies R nr Burns	200 cfs	** Observed	Feb 21	**	<b>June 2</b>
Silvies R nr Burns	100 cfs	Apr 7	Apr 30	May 24	<b>June 13</b>
Silvies R nr Burns	50 cfs	Jun 17	May 22	Apr 26	<b>July 3</b>
Donner Und Blitzen R nr Frenchglen	200 cfs	** Will not exceed without rain **			<b>June 20</b>
Donner Und Blitzen R nr Frenchglen	100 cfs	May 11	May 27	Jun 12	<b>July 9</b>

# 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.nrcs.usda.gov/wps/portal/nrcs/main/or/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. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

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

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

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

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

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

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

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

**30-Year Average.** The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 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.

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

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

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

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

## Using the Forecasts - an Example

**Using the 50 Percent Exceedance Forecast.** Using the example forecasts shown on the next page, 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.

**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.

JOHN DAY BASIN  
Streamflow Forecasts - February 1, 2013

Forecast Point	Forecast Period	Future Conditions				30-Yr Avg. (1000AF)	
		Drier		Wetter			
		Chance Of Exceeding *					
		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	8.5
	APR-SEP	5.2	6.8	7.9	90	9.0	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.2	5.4	6.9	99	8.4	7.0
	APR-SEP	1.7	3.3	4.4	90	5.5	4.9

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

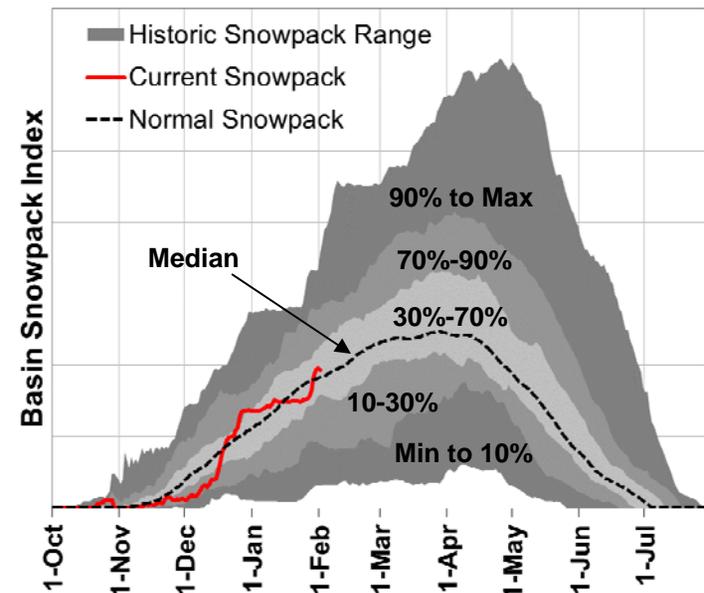
## Interpreting Snowpack Plots

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 10<sup>th</sup> percentile and the 90<sup>th</sup> percentile to maximum). The medium grey shading indicates the range from the 10<sup>th</sup> to 30<sup>th</sup> percentiles and the 70<sup>th</sup> to 90<sup>th</sup> percentiles. The light grey shading indicates the range between the 30<sup>th</sup> to 70<sup>th</sup> percentiles, while the median is the 50<sup>th</sup> percentile. A percentile is the value of the snowpack index below which the given percent of historical years fall. For instance, the 90<sup>th</sup> 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



USDA Natural Resources Conservation Service  
1201 NE Lloyd Suite 900  
Portland, OR 97232-1274

---

Official Business



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

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**Ron Alvarado, State Conservationist**  
Natural Resources Conservation Service  
Portland, Oregon

## **IMPORTANT NOTICE**

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