



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

March 1, 2015



A brief glimpse of winter on Mt. Bachelor as NRCS surveyors measure record low snowpack.

Photo courtesy of Kurt Moffitt (NRCS Oregon)

NRCS snow surveyors, Kurt Moffitt and Gabby Coughlin, measured record low snowpack near Mt. Bachelor at two snow courses this month. Tangent snow course (5470 ft) dates back over 60 years and is one of the oldest sites in the basin. The March measurement set a new record low with only 6" of snow depth (1.8" of snow water), which is 10% of normal for this site. The previous record low for March 1 was set in 1977. As of March 1, 32 sites in Oregon set new record lows for snowpack and many more are near record low. Because of this, below normal streamflow is expected this summer in many areas across Oregon.

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General Outlook

March 1, 2015

SUMMARY

Oregon's mountains have received near normal precipitation since the water year began on October 1, but the snowpack is well below normal as of March 1. Warm temperatures during the majority of this year's storms resulted in more rain than snow in the mountains. Only a few storms were cold enough for snow this season and only the highest of elevations have had a real winter. February brought a few rounds of snow throughout the state, but it was well below the normal February snow accumulation. As of March 1, 45 percent of Oregon's long-term snow monitoring sites are now at the lowest snowpack levels on record. Currently, 68 out of 153 snow monitoring sites across the state are snow-free, which is highly unusual for March 1.

Without snowpack in the mountains, there is a high likelihood that Oregon's streams and rivers will have below normal flows this summer. Low flowing rivers in the summer time have many implications affecting fish, wildlife, irrigation, livestock, city municipalities and hydropower operations. Reservoir operators have at least been able to take advantage of the rain to increase reservoir storage in many locations. Water users that have access to reservoir storage will fare better than those who depend on unregulated streamflow during the summertime.

While no two years are exactly alike, 1981 and 2005 had limited snowpacks similar to this year. In those years, spring rains helped offset the impacts of the low snowpack by delaying irrigation demand and increasing reservoir storage. Unless the snowpack improves or a rainy spring occurs, there will likely be water shortages in parts of Oregon this summer. NOAA's Climate Prediction Center is calling for overall warm and dry conditions for March thru May: <http://www.cpc.ncep.noaa.gov/>. Additionally, the latest drought monitor update shows most of Oregon in moderate to extreme drought status: <http://droughtmonitor.unl.edu/>.

SNOWPACK

Excluding the highest elevations in Oregon and the northeast corner of the state, the snowpack has already reached its seasonal peak. In many cases, the mountains have experienced more snowmelt than accumulation since January 1. The storm in the last week of February boosted the snowpack in parts of Oregon but could not reverse the damage already done by this season's unusually warm temperatures. As of March 1, 32 snow measuring sites with more than 25 years of measurements are experiencing an all-time record low snowpack in Oregon. Most of these sites are spread throughout the Cascades. Across the rest of the state, many more are near record low. Previous record lows being replaced by this year's low snowpacks were measured in 2014, 2005, 1981, 1977 or 1963, depending on the location.

Mt. Howard (7910 feet), located in the northern Willamette Mountains, has the only above average snow in the state (112%). Elsewhere throughout the state, the snowpack is well below normal. Collectively, the lowest snowpack is only 10% of normal in the Willamette basin and northeastern Oregon has the best snowpack at 53% of normal in the Grande Ronde, Powder, Burnt and Imnaha basins. The higher elevation sites in each basin, like Mt. Howard, are pulling the basin snowpack averages up. Most sites below 5000 feet have little to no snow at all as of March 1.

PRECIPITATION

Since the water year began in October, Oregon's mountains have received an average amount of precipitation. However, unusually warm temperatures this season have resulted in unusual amounts of rain and unusually low amounts of snowfall. While the water year total precipitation is near average throughout the mountains, January and February brought below average precipitation for most of the state, illustrating how wet the fall was.

February precipitation can be summed up by two storms: an atmospheric river event during the second week of February that brought over a foot of snow to parts of Oregon and heavy rain in others; and the last few days of the month which brought another foot of snow to parts of Oregon, rain in others, and little to nothing in southeastern Oregon. In between those two storm cycles in February, it was warm and sunny; snow surveyors reported dusty conditions in areas usually under snow prior to the late February storm. The month's variety of precipitation resulted in monthly precipitation as low as 72% of average in the Lake County and Goose Lake basin and up to 135% of average in the Rogue and Umpqua basins.

RESERVOIRS

Oregon's reservoirs have benefited from the rainy winter. Many reservoir operators were able to capture the moisture received and increase reservoir storage to near normal March 1 levels. In some locations, this storage will allow the irrigators a reprieve from a second or third consecutive year of low snowpack levels. In other cases such as Lake Owyhee (43% of average; 24% of capacity), there is still much needed moisture to improve the reservoir storage. Most of the major reservoirs are storing more water than this time last year, including Lake Owyhee.

STREAMFLOW

Many of Oregon's streams and rivers depend on mountain snowpack to maintain runoff throughout the summertime. Once the snowpack has melted, streamflows diminish, often receding quickly to base flows. In a year such as this when there is limited snowpack, summer streamflow volumes are expected to be below normal and streams will likely peak earlier than normal. Rainfall over the next couple months may help improve reservoir storage and increase streamflows during the storm events, but it will not help with streamflow this summer.

The NRCS streamflow forecasts use historical snowpack, precipitation and streamflow relationships to predict summer streamflow; this year, some of the models are using record low snowpack to predict this summer's runoff volumes. However, not all of the models are forecasting record low streamflow. While we are getting down to the wire, history shows that there have been cases where late spring precipitation has swooped in at the last moment to save the day in a low snow year. This happens more often with rivers flowing from the Cascades, such as in the Willamette basin. As of March 1, most of Oregon's streams are forecast to be below normal this summer.

A summary of streamflow forecasts for Oregon follows:

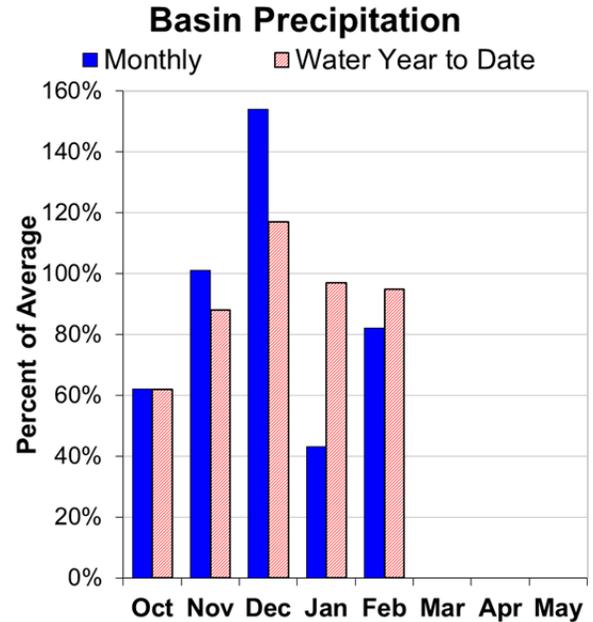
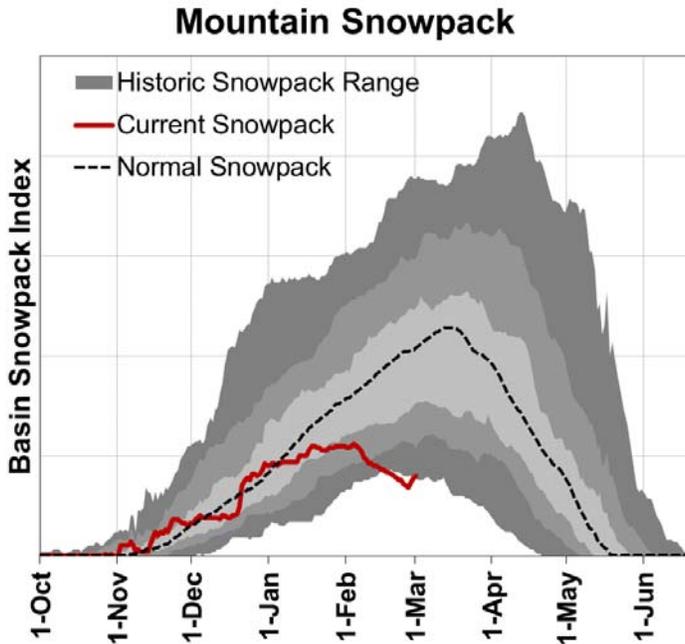
STREAM	Median Forecast (April through September)	
	Volume (Acre-Feet)	Percent of Average
Owyhee Reservoir Inflow	112,000	28
Grande Ronde R at Troy	1,200,000	92
Umatilla R at Pendleton	125,000	82
Deschutes R at Benham Falls	420,000	87
Willamette R at Salem	3,870,000	82
Rogue R at Raygold	610,000	76
Upper Klamath Lake Inflow	205,000	43
Silvies R nr Burns	23,000	25

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

March 1, 2015



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 40% of normal. This is significantly lower than last month when the basin snowpack was 71% of normal. There are three long-term snow measuring sites in the basin that set a new record low for March 1 snowpack levels. Out of 38 snow monitoring sites in the basin, there are 17 that are snow-free.

PRECIPITATION

February precipitation was 82% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 95% of average.

RESERVOIR

Reservoir storage across the basin is well below average. As of March 1, storage at major reservoirs in the basin ranges from 42% of average at Warm Springs Reservoir to 88% of average at Beulah Reservoir.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 22% to 47% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Owyhee And Malheur Basins Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Owyhee R nr Rome	MAR-JUL	58	121	177	34%	245	360	515
	MAR-SEP	65	131	188	35%	255	375	530
	APR-SEP	5.4	39	80	22%	136	245	365
Owyhee R bl Owyhee Dam ²	MAR-JUL	79	144	199	36%	265	375	555
	MAR-SEP	100	168	225	38%	290	400	585
	APR-SEP	28	71	112	28%	162	250	405
Malheur R nr Drewsey	MAR-JUL	19.6	36	50	45%	66	93	112
	APR-JUL	6.7	18.4	30	40%	44	69	75
	APR-SEP	12.6	24	35	47%	47	67	74
NF Malheur R at Beulah	MAR-JUL	19.3	30	39	51%	49	66	76

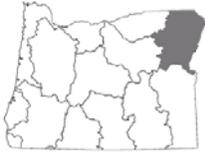
* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Beulah	28.3	22.2	32.1	60.0
Bully Creek	12.0	10.9	16.4	30.0
Lake Owyhee	168.7	127.0	392.6	715.0
Warm Springs	34.3	27.1	82.2	191.0

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	7	25%	30%
South Fork Owyhee Basin	6	41%	44%
Upper Malheur Basin	8	27%	42%
Upper Owyhee Basin	5	46%	51%

Owyhee And Malheur Basins Summary for March 1, 2015

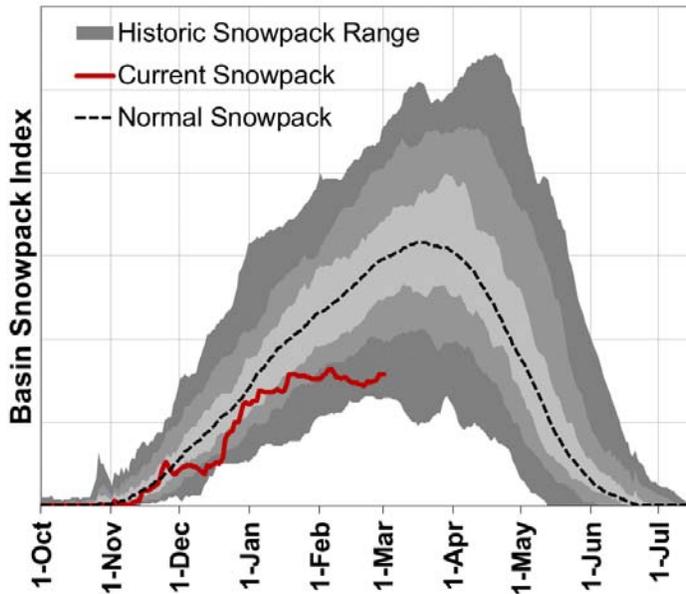
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Granite Peak SNOTEL	8543	1-Mar	36	10.2	8.2	18.3	56%
Trout Creek AM	7890	1-Mar	22	8.1	5.1	11.5	70%
Toe Jam SNOTEL	7700	1-Mar	32	9.4	9.3		
Govt Corrals AM	7400	1-Mar	20	7.4	4.9		
Jack Creek Upper SNOTEL	7250	1-Mar	35	9.6	8.8	14.4	67%
Fawn Creek SNOTEL	7000	1-Mar	33	9.0	8.0	13.4	67%
Merritt Mountain AM	7000	1-Mar	3	0.3	0.4	6.2	5%
Buckskin Lower SNOTEL	6915	1-Mar	5	0.5	3.9	8.1	6%
Gold Creek Snow Course	6707	24-Feb	0	0.0	2.3	5.8	0%
Big Bend SNOTEL	6700	1-Mar	8	3.2	5.1	8.4	38%
Fry Canyon SNOTEL	6700	1-Mar	6	0.8			
Fry Canyon Snow Course	6700	26-Feb	3	1.0	2.8	7.9	13%
Laurel Draw SNOTEL	6697	1-Mar	7	2.5	4.4	10.0	25%
Columbia Basin AM	6650	1-Mar	2	0.2	1.4	8.6	2%
Red Canyon AM	6600	25-Feb	0	0.0	0.5	7.7	0%
Louse Canyon AM	6530	25-Feb	0	0.0	0.0	4.2	0%
South Mtn. SNOTEL	6500	1-Mar	9	3.4	6.4	15.0	23%
Succor Creek AM	6310	25-Feb	0	0.0	4.4	8.4	0%
Quinn Ridge AM	6270	25-Feb	0	0.0	0.0	2.0	0%
Taylor Canyon SNOTEL	6200	1-Mar	0	0.0	0.0	5.2	0%
Blue Mountain Spring SNOTEL	5870	1-Mar	27	7.2	11.3	14.4	50%
Vaught Ranch AM	5850	25-Feb	0	0.0	0.0	4.8	0%
Barney Creek (New) Snow Course	5830	3-Mar	16	4.0	5.2		
Buck Pasture AM	5740	25-Feb	0	0.0	0.0	1.6	0%
Lookout Butte AM	5740	25-Feb	0	0.0	0.0	0.0	
Mud Flat SNOTEL	5730	1-Mar	5	0.3	0.7	7.1	4%
Battle Creek AM	5710	25-Feb	0	0.0	0.0	3.6	0%
Boulder Creek AM	5710	25-Feb	0	0.0	0.3	3.0	0%
Reynolds Creek SNOTEL	5600	1-Mar	4	1.2	0.5	2.1	57%
Bull Basin AM	5460	25-Feb	0	0.0	0.0	1.9	0%
Dooley Mountain Snow Course	5440	2-Mar	8	2.4	5.0	8.2	29%
Call Meadows AM	5380	25-Feb	0	0.0	0.0	4.4	0%
Bully Creek AM	5300	25-Feb	0	0.0	0.0	1.8	0%
Rock Springs SNOTEL	5290	1-Mar	6	0.8	1.4	6.2	13%
Lake Creek R.S. SNOTEL	5240	1-Mar	13	4.4	5.9	10.3	43%
Taylor Butte SNOTEL	5030	1-Mar	0	0.0	0.0	7.0	0%
Flag Prairie AM	4720	25-Feb	0	0.0	0.0	4.0	0%
Eldorado Pass Snow Course	4630	2-Mar	0	0.0	0.4	3.0	0%



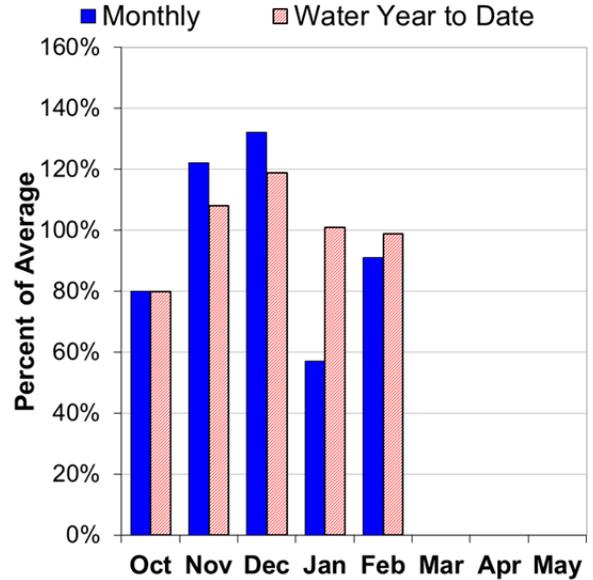
Grande Ronde, Powder, Burnt and Innaha Basins

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 53% of normal. This is significantly lower than last month when the basin snowpack was 63% of normal. March 1 snowpack measurements at Bowman Springs and Eilertson Meadows SNOTEL sites were at record low levels.

PRECIPITATION

February precipitation was 91% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 99% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 69% of average at Phillips Lake to 174% of average at Wallowa Lake.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 53% to 92% of average. Overall, forecasts decreased slightly from last month's report. Water users in the Powder and Burnt River drainages should anticipate water shortages this coming summer and begin to prepare accordingly.

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

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Burnt R nr Hereford	MAR-JUL	6.9	17.0	25	54%	33	45	46
	APR-SEP	5.6	10.2	18.6	53%	27	39	35
Deer Ck nr Sumpter	MAR-JUL	5.4	8.6	10.8	58%	13.0	16.2	18.5
Powder R nr Sumpter	MAR-JUL	21	33	41	65%	48	60	63
	APR-JUL	15.2	26	34	64%	42	53	53
	APR-SEP	14.5	26	35	65%	43	55	54
Wolf Ck Reservoir Inflow ²	MAR-JUN	5.6	9.2	11.7	65%	14.2	17.8	18.1
Pine Ck nr Oxbow	MAR-JUL	81	119	145	73%	171	210	200
	APR-JUL	58	90	111	71%	133	165	157
	APR-SEP	61	93	115	71%	137	170	163
Imnaha R at Imnaha	APR-JUL	140	188	220	86%	250	300	255
	APR-SEP	156	205	240	86%	275	325	280
Catherine Ck nr Union	APR-JUL	36	45	52	87%	58	67	60
	APR-SEP	39	48	55	86%	62	71	64
Lostine R nr Lostine	APR-JUL	80	89	95	90%	101	110	106
	APR-SEP	88	97	104	90%	111	120	115
Bear Ck nr Wallowa	APR-SEP	45	53	58	89%	64	72	65
Grande Ronde R at Troy ¹	MAR-JUL	1060	1260	1390	92%	1520	1720	1510
	APR-SEP	865	1060	1200	92%	1330	1530	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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Phillips Lake	24.1	13.2	34.8	73.5
Thief Valley	13.9	13.9	15.3	17.4
Unity	20.2	8.9	14.5	25.2
Wallowa Lake	28.5	20.1	16.4	37.5
Wolf Creek	4.3	2.9	3.4	10.4

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Burnt Basin	5	38%	64%
Imnaha Basin	5	72%	86%
Lower Grande Ronde Basin	4	37%	84%
Powder Basin	11	60%	88%
Upper Grande Ronde Basin	8	61%	100%
Wallowa Basin	5	73%	102%

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

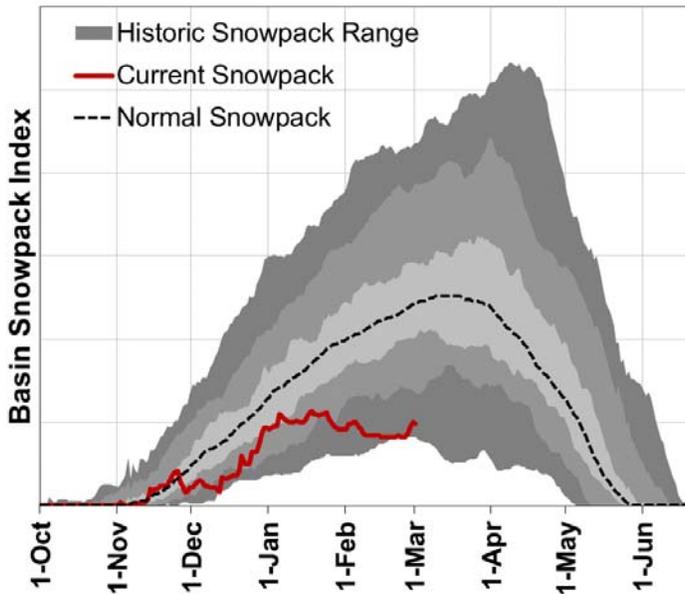
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Mt. Howard SNOTEL	7910	1-Mar	42	13.2	18.6	11.8	112%
Aneroid Lake #2 SNOTEL	7400	1-Mar	46	14.2	18.3	20.2	70%
TV Ridge AM	7050	1-Mar	24	8.6	9.6	14.2	61%
Little Alps Snow Course	6360	27-Feb	22	6.3	10.2	10.4	61%
Big Sheep AM	6230	1-Mar	34	12.2	14.0	21.4	57%
Bear Saddle SNOTEL	6180	1-Mar	28	10.8	10.5	21.0	51%
Placer Creek Snow Course	5860	26-Feb	28	9.8	7.0	15.4	64%
Bourne SNOTEL	5850	1-Mar	15	6.5	11.5	14.0	46%
Barney Creek (New) Snow Course	5830	3-Mar	16	4.0	5.2		
Moss Springs SNOTEL	5760	1-Mar	41	15.6	24.5	20.9	75%
Taylor Green SNOTEL	5740	1-Mar	27	10.8	15.9	18.1	60%
Boulder Creek AM	5710	25-Feb	0	0.0	0.3	3.0	0%
Spruce Springs SNOTEL	5700	1-Mar	5	1.8	13.1	14.7	12%
Wolf Creek SNOTEL	5630	1-Mar	29	7.9	12.3	14.6	54%
Milk Shakes SNOTEL	5580	1-Mar	54	18.5	29.7		
West Branch SNOTEL	5560	1-Mar	29	11.2	15.6	19.0	59%
Touchet SNOTEL	5530	1-Mar	31	9.8	22.7	26.5	37%
Eilertson Meadows SNOTEL	5510	1-Mar	1	0.3	6.6	9.2	3%
Dooley Mountain Snow Course	5440	2-Mar	8	2.4	5.0	8.2	29%
Gold Center SNOTEL	5410	1-Mar	12	4.7	8.5	9.0	52%
Schneider Meadows SNOTEL	5400	1-Mar	46	17.2	17.6	25.3	68%
Beaver Reservoir SNOTEL	5150	1-Mar	11	4.6	9.8	8.9	52%
Tipton SNOTEL	5150	1-Mar	21	6.1	7.7	11.1	55%
Thorson Cabin #2 Snow Course	5100	25-Feb	5	1.8	6.1		
High Ridge SNOTEL	4920	1-Mar	31	12.4	18.1	21.4	58%
County Line SNOTEL	4830	1-Mar	1	0.2	2.8	4.3	5%
Eldorado Pass Snow Course	4630	2-Mar	0	0.0	0.4	3.0	0%
Little Antone (Alt.) Snow Course	4560	27-Feb	8	2.7	6.0	8.8	31%
Bowman Springs SNOTEL	4530	1-Mar	2	0.7	6.9	7.5	9%
East Eagle Snow Course	4400	28-Feb	38	15.4	17.2	21.1	73%
Sourdough Gulch SNOTEL	4000	1-Mar	1	0.4	1.5	0.2	200%



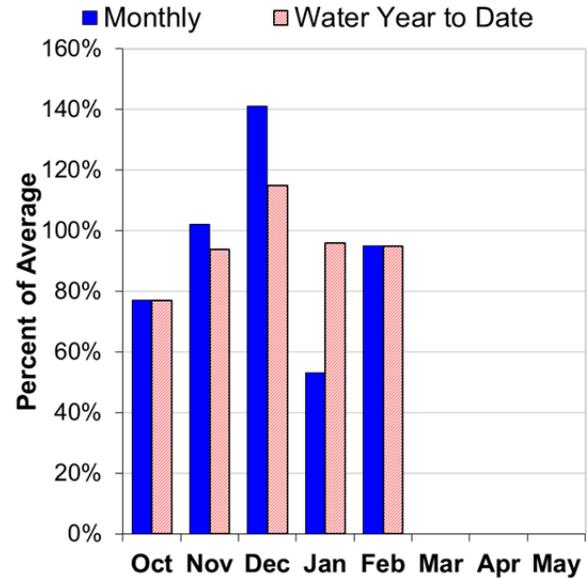
Umatilla, Walla Walla, and Willow Basins

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 41% of normal. This is slightly lower than last month when the basin snowpack was 46% of normal. March 1 snowpack at Bowman Springs SNOTEL site set a new record low.

PRECIPITATION

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

RESERVOIR

Reservoir storage across the basin is currently above average. As of March 1, storage at major reservoirs in the basin was 109% of average and 53% percent of capacity.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 67% to 83% of average. Overall, forecasts decreased slightly from last month's report. Water users in the basin without access to reservoir water should anticipate water shortages this coming summer and begin to prepare accordingly.

Umatilla, Walla Walla And Willow Basins Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater	MAR-SEP	52	61	66	83%	71	80	80
	APR-JUL	31	38	43	80%	48	55	54
	APR-SEP	42	50	55	83%	60	68	66
Umatilla R ab Meacham Ck	MAR-SEP	64	79	89	84%	99	114	106
	APR-JUL	39	52	61	82%	70	83	74
	APR-SEP	43	56	65	81%	74	87	80
Umatilla R at Pendleton	MAR-SEP	132	166	189	84%	210	245	225
	APR-JUL	71	102	122	83%	142	173	147
	APR-SEP	74	104	125	82%	146	176	153
McKay Ck nr Pilot Rock	APR-SEP	5.7	17.2	25	81%	33	44	31
Butter Ck nr Pine City	MAR-JUL	3.5	7.4	10.0	67%	12.6	16.5	14.9
	APR-SEP	1.74	4.6	6.6	67%	8.6	11.5	9.8
Willow Ck ab Willow Lake nr Heppner	MAR-JUL	1.18	4.4	6.6	65%	8.8	12.0	10.1
	APR-JUL	0.09	2.7	4.5	64%	6.3	8.9	7.0
Rhea Ck nr Heppner	MAR-JUL	1.77	5.2	7.5	68%	9.8	13.2	11.1

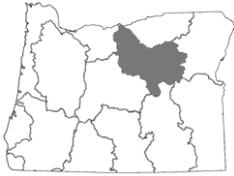
* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Cold Springs	23.8	15.5	23.6	50.0
McKay	44.5	37.2	39.2	73.8
Willow Creek	5.2	4.8	4.6	13.9

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5	43%	85%
Walla Walla Basin	7	41%	85%

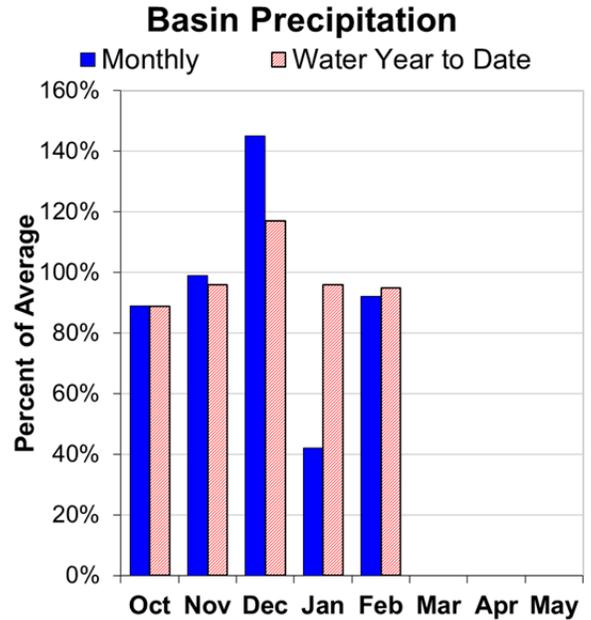
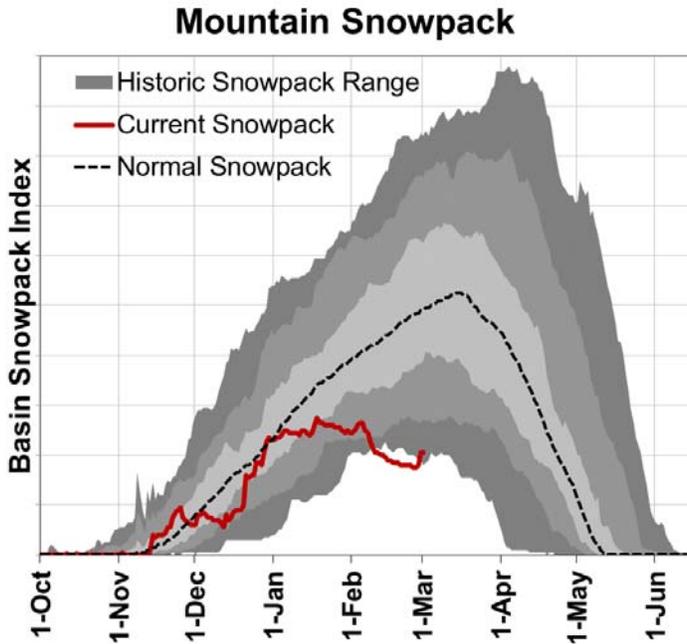
Umatilla, Walla Walla And Willow Basins Summary for March 1, 2015

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
Arbuckle Mtn SNOTEL	5770	1-Mar	30	8.8	11.4	15.2	58%
Spruce Springs SNOTEL	5700	1-Mar	5	1.8	13.1	14.7	12%
Milk Shakes SNOTEL	5580	1-Mar	54	18.5	29.7		
Touchet SNOTEL	5530	1-Mar	31	9.8	22.7	26.5	37%
Madison Butte SNOTEL	5150	1-Mar	7	1.2	3.3	3.9	31%
Lucky Strike SNOTEL	4970	1-Mar	5	1.7	5.8	6.8	25%
High Ridge SNOTEL	4920	1-Mar	31	12.4	18.1	21.4	58%
Indian Ridge Snow Course	4908	24-Feb	20	6.7	19.0		
Bowman Springs SNOTEL	4530	1-Mar	2	0.7	6.9	7.5	9%
Emigrant Springs SNOTEL	3800	1-Mar	0	0.0	4.5	4.1	0%



John Day Basin

March 1, 2015



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 42% of normal. This is significantly lower than last month when the basin snowpack was 60% of normal. March 1 snowpack at Ochoco Meadows SNOTEL site set a new record low.

PRECIPITATION

February precipitation was 92% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 95% of average.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 45% to 73% of average. Overall, forecasts decreased from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

John Day Basin Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *

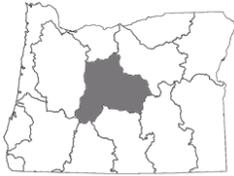
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Strawberry Ck nr Prairie City	MAR-JUL	3.1	4.6	5.6	66%	6.7	8.2	8.5
	APR-SEP	3.1	4.7	5.8	66%	6.9	8.5	8.8
Mountain Ck nr Mitchell	MAR-JUL	1.13	1.90	3.1	49%	4.2	5.9	6.3
	APR-SEP	0.74	1.21	2.2	45%	3.3	4.8	4.9
Camas Ck nr Ukiah	MAR-JUL	20	30	36	73%	42	52	49
	APR-SEP	9.2	18.6	25	71%	31	41	35
MF John Day R at Ritter	MAR-JUL	56	87	109	70%	130	161	156
	APR-SEP	40	69	89	71%	109	138	126
NF John Day R at Monument	MAR-JUL	315	455	555	73%	650	790	765
	APR-SEP	225	355	440	73%	530	660	600

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

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Lower John Day Basin	6	25%	61%
North Fork John Day Basin	8	57%	90%
Upper John Day Basin	6	42%	65%

John Day Basin Summary for March 1, 2015

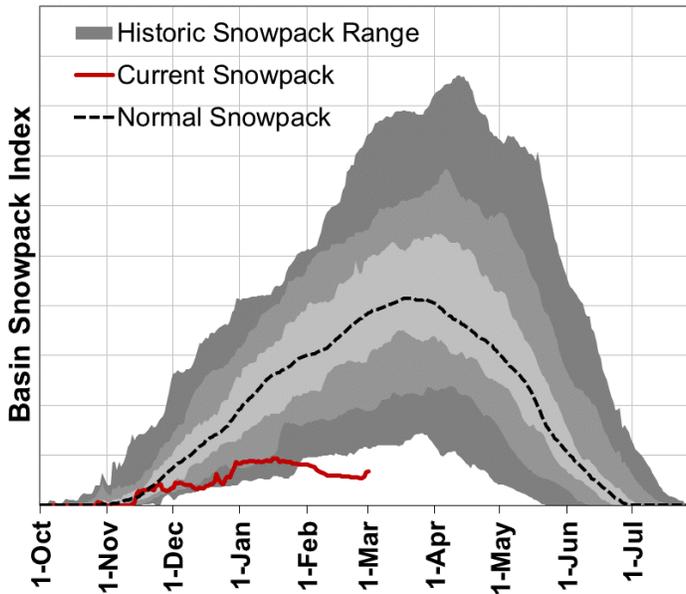
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Anthony Lake (Rev) Snow Course	7160	27-Feb	59	18.5	25.0	20.0	93%
Little Alps Snow Course	6360	27-Feb	22	6.3	10.2	10.4	61%
Snow Mountain SNOTEL	6230	1-Mar	16	4.7	4.2	9.8	48%
Blue Mountain Spring SNOTEL	5870	1-Mar	27	7.2	11.3	14.4	50%
Derr Snow Course	5860	2-Mar	9	2.2	6.7	9.2	24%
Bourne SNOTEL	5850	1-Mar	15	6.5	11.5	14.0	46%
Derr. SNOTEL	5850	1-Mar	26	6.9	7.9	12.8	54%
Barney Creek (New) Snow Course	5830	3-Mar	16	4.0	5.2		
Arbuckle Mtn SNOTEL	5770	1-Mar	30	8.8	11.4	15.2	58%
Ochoco Meadows SNOTEL	5430	1-Mar	5	0.5	6.1	10.0	5%
Gold Center SNOTEL	5410	1-Mar	12	4.7	8.5	9.0	52%
Starr Ridge SNOTEL	5250	1-Mar	4	0.7	4.5	6.2	11%
Lake Creek R.S. SNOTEL	5240	1-Mar	13	4.4	5.9	10.3	43%
Ochoco Meadows Snow Course	5190	2-Mar	5	1.5	5.4	10.0	15%
Madison Butte SNOTEL	5150	1-Mar	7	1.2	3.3	3.9	31%
Tipton SNOTEL	5150	1-Mar	21	6.1	7.7	11.1	55%
Lucky Strike SNOTEL	4970	1-Mar	5	1.7	5.8	6.8	25%
County Line SNOTEL	4830	1-Mar	1	0.2	2.8	4.3	5%
Marks Creek Snow Course	4580	2-Mar	0	0.0	0.4	3.1	0%
Little Antone (Alt.) Snow Course	4560	27-Feb	8	2.7	6.0	8.8	31%



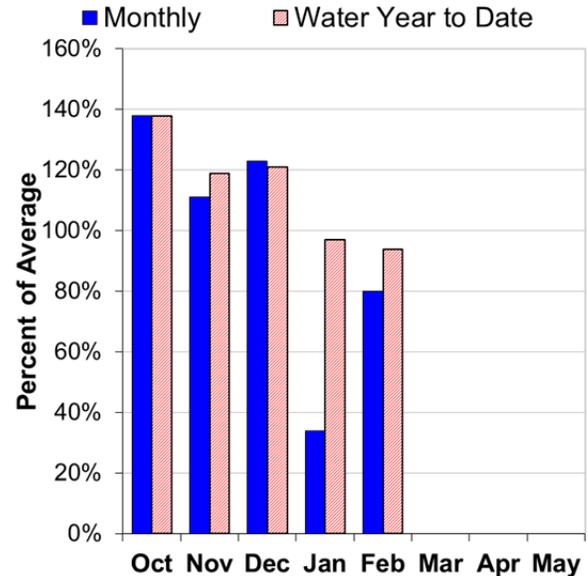
Upper Deschutes and Crooked Basins

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 22% of normal. This is significantly lower than last month when the basin snowpack was 31% of normal. There are thirteen long-term snow measuring sites in the basin that set a new record low for March 1 snowpack levels.

PRECIPITATION

February precipitation was 80% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 94% of average.

RESERVOIR

Reservoir storage across the basin is currently above average. As of March 1, storage at major reservoirs in the basin ranges from 110% of average at Wickiup Reservoir to 157% of average at Crescent Lake.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 36% to 87% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin without access to reservoir water should anticipate water shortages this coming summer and begin to prepare accordingly.

Upper Deschutes And Crooked Basins Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	MAR-JUL	17.0	24	29	81%	34	41	36
	MAR-SEP	32	40	45	78%	51	59	58
	APR-JUL	14.2	20	24	80%	28	34	30
	APR-SEP	28	35	40	77%	45	52	52
Crane Prairie Reservoir Inflow ²	MAR-JUL	32	42	48	73%	55	64	66
	MAR-SEP	48	60	68	70%	76	87	97
	APR-JUL	26	34	40	71%	45	53	56
	APR-SEP	42	52	59	67%	66	77	88
Crescent Lake Inflow ²	MAR-JUL	5.0	10.1	13.5	78%	17.0	22	17.2
	MAR-SEP	6.0	11.2	14.8	76%	18.3	24	19.5
	APR-JUL	4.2	8.6	11.6	77%	14.6	18.9	15.0
	APR-SEP	5.5	9.9	12.8	74%	15.8	20	17.4
Little Deschutes R nr La Pine	MAR-JUL	33	45	54	70%	62	74	77
	MAR-SEP	35	48	57	69%	66	79	83
	APR-JUL	20	30	36	57%	43	52	63
	APR-SEP	19.4	31	39	57%	47	59	69
Deschutes R at Benham Falls ²	MAR-JUL	310	335	350	89%	365	390	395
	MAR-SEP	450	480	500	89%	520	550	560
	APR-JUL	250	270	280	88%	290	310	320
	APR-SEP	380	405	420	87%	435	460	485
Wychus Ck nr Sisters	MAR-JUL	22	25	27	69%	29	32	39
	MAR-SEP	29	32	35	69%	37	41	51
	APR-JUL	19.5	22	24	69%	26	29	35
	APR-SEP	26	29	32	68%	34	37	47
Prineville Reservoir Inflow ²	MAR-JUL	35	57	75	44%	95	130	171
	MAR-SEP	35	57	75	44%	96	131	171
	APR-JUL	10.0	25	38	37%	54	84	102
	APR-SEP	9.2	23	37	36%	54	83	102
Ochoco Reservoir Inflow ²	MAR-JUL	6.0	10.2	13.7	42%	17.7	24	33
	MAR-SEP	2.9	5.7	10.9	34%	16.1	24	32
	APR-JUL	2.7	6.0	9.0	43%	12.6	18.8	21
	APR-SEP	2.2	5.2	8.0	40%	11.4	17.5	20

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

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

Upper Deschutes And Crooked Basins Summary for March 1, 2015

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Crane Prairie	50.1	47.4	39.8	55.3
Crescent Lake	74.4	67.3	47.5	86.9
Ochoco	30.7	16.2	23.4	47.5
Prineville	110.9	100.5	98.9	153.0
Wickiup	194.4	187.7	176.1	200.0

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	22%	51%
Upper Crooked Basin	5	25%	59%
Upper Deschutes Basin	14	19%	68%

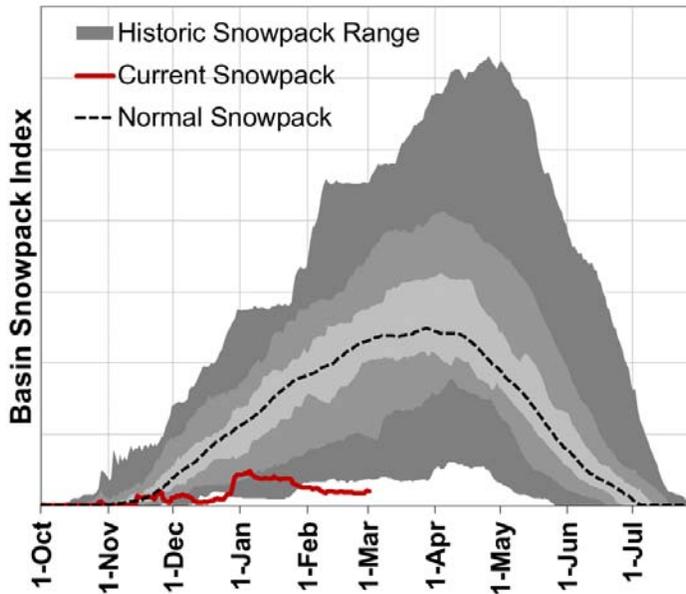
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
New Dutchman #3 Snow Course	6320	2-Mar	55	19.4	37.2	39.6	49%
Snow Mountain SNOTEL	6230	1-Mar	16	4.7	4.2	9.8	48%
Derr Snow Course	5860	2-Mar	9	2.2	6.7	9.2	24%
Derr. SNOTEL	5850	1-Mar	26	6.9	7.9	12.8	54%
Three Creeks Meadow SNOTEL	5690	1-Mar	11	2.9	10.4	16.1	18%
Summit Lake SNOTEL	5610	1-Mar	28	9.7	17.3	31.2	31%
Bald Peter Snow Course	5600	25-Feb	3	1.4	21.4	26.4	5%
Irish Taylor SNOTEL	5540	1-Mar	23	9.4	22.1	30.8	31%
Tangent Snow Course	5470	2-Mar	6	1.8	11.8	18.1	10%
Ochoco Meadows SNOTEL	5430	1-Mar	5	0.5	6.1	10.0	5%
Ochoco Meadows Snow Course	5190	2-Mar	5	1.5	5.4	10.0	15%
Racing Creek Snow Course	5160	25-Feb	0	0.0	13.4	12.3	0%
Cascade Summit SNOTEL	5100	1-Mar	18	6.4	17.6	26.2	24%
Roaring River SNOTEL	4950	1-Mar	3	1.0	13.5	25.0	4%
New Crescent Lake SNOTEL	4910	1-Mar	3	0.7	4.7	12.0	6%
Chemult Alternate SNOTEL	4850	1-Mar	0	0.0	0.1	8.1	0%
Hogg Pass SNOTEL	4790	1-Mar	2	0.3	14.4	20.1	1%
Mckenzie SNOTEL	4770	1-Mar	10	4.4	24.1	36.4	12%
Marks Creek Snow Course	4580	2-Mar	0	0.0	0.4	3.1	0%
Hungry Flat Snow Course	4400	2-Mar	4	0.4	0.8	2.1	19%
Salt Creek Falls SNOTEL	4220	1-Mar	1	0.2	7.1	16.3	1%
Santiam Jct. SNOTEL	3740	1-Mar	0	0.0	8.1	15.5	0%



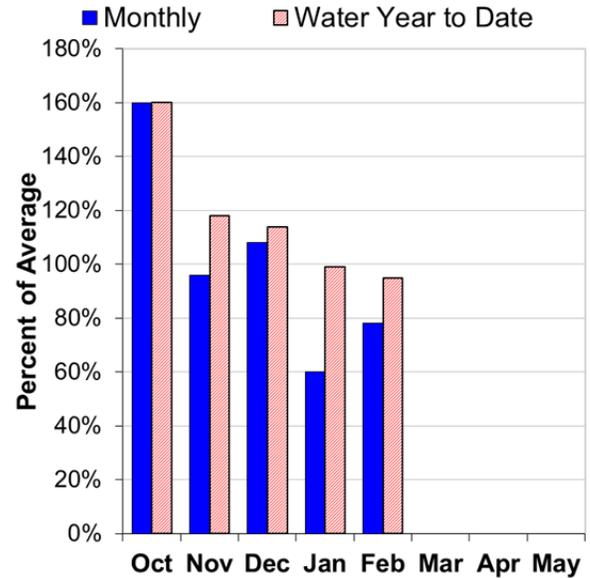
Hood, Sandy, and Lower Deschutes Basins

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 11% of normal. This is slightly lower than last month when the basin snowpack was 13% of normal. There are eight long-term snow measuring sites in the basin that set a new record low for March 1 snowpack levels. Out of 16 snow monitoring sites in the basin, there are 10 that are snow-free.

PRECIPITATION

February precipitation was 78% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 95% of average.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 62% to 78% of average. Overall, forecasts remain similar to last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Hood, Sandy And Lower Deschutes Basins Summary for March 1, 2015

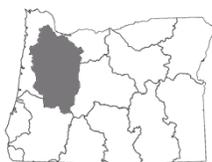
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood River nr Dee	APR-JUL	44	66	81	68%	96	119	120
	APR-SEP	61	85	102	73%	118	143	139
Hood R at Tucker Bridge	APR-JUL	84	116	138	61%	160	192	225
	APR-SEP	106	141	165	62%	189	225	265
Sandy R nr Marmot	APR-JUL	169	210	240	77%	270	310	310
	APR-SEP	205	250	280	78%	310	350	360

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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Clear Lake	5.3	4.5	3.8	11.9

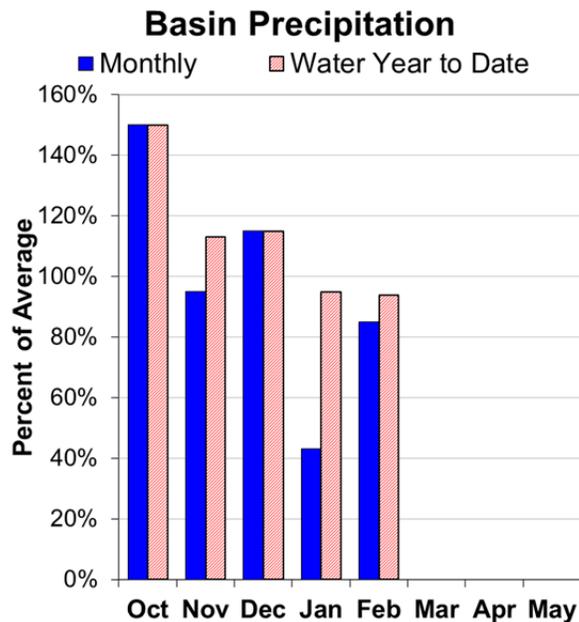
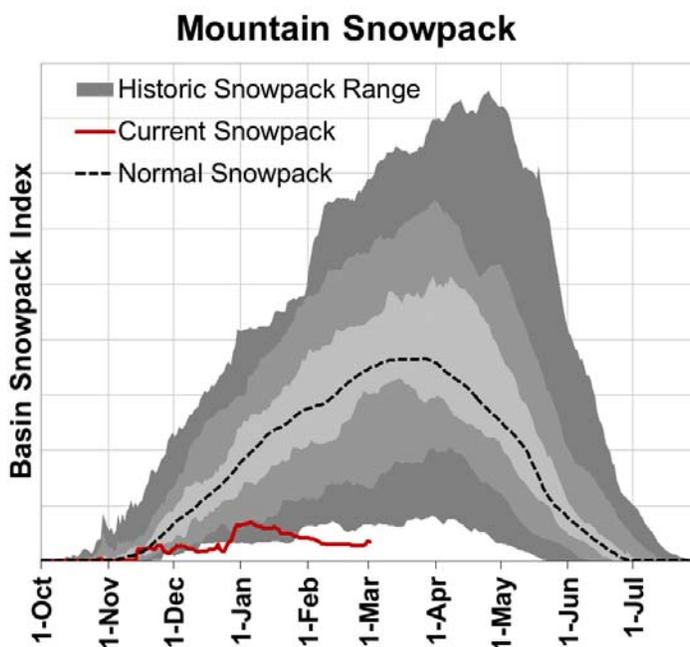
Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	10%	75%
Lower Deschutes Basin	9	14%	77%
Middle Columbia - Hood Basin	8	15%	76%

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
High Prairie Snow Course	6080	27-Feb	34	11.1	27.1	36.6	30%
Bald Peter Snow Course	5600	25-Feb	3	1.4	21.4	26.4	5%
Mt Hood Test Site SNOTEL	5370	1-Mar	37	14.7	42.2	48.0	31%
Racing Creek Snow Course	5160	25-Feb	0	0.0	13.4	12.3	0%
Red Hill SNOTEL	4410	1-Mar	2	0.7	31.7	41.7	2%
Mill Creek Meadow Snow Course	4400	27-Feb	0	0.0	8.4	11.7	0%
Surprise Lakes SNOTEL	4290	1-Mar	19	8.7	33.6	39.7	22%
Beaver Creek #2 Snow Course	4220	25-Feb	0	0.0	6.6	9.0	0%
Beaver Creek #1 Snow Course	4210	25-Feb	0	0.0	8.8	14.0	0%
Mud Ridge SNOTEL	4070	1-Mar	4	1.0	16.4	24.1	4%
Clear Lake SNOTEL	3810	1-Mar	0	0.0	7.1	12.4	0%
Blazed Alder SNOTEL	3650	1-Mar	0	0.0	17.8	25.0	0%
Clackamas Lake SNOTEL	3400	1-Mar	0	0.0	6.5	12.4	0%
Greenpoint SNOTEL	3310	1-Mar	0	0.0	7.5	18.0	0%
North Fork SNOTEL	3060	1-Mar	0	0.0	10.0	14.8	0%
South Fork Bull Run SNOTEL	2690	1-Mar	0	0.0	0.3	1.7	0%



Willamette Basin

March 1, 2015



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 10% of normal. This is slightly lower than last month when the basin snowpack was 16% of normal. There are eight long-term snow measuring sites in the basin that set a new record low for March 1 snowpack. Out of 26 snow monitoring sites in the basin, there are 16 that are snow-free.

PRECIPITATION

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

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 57% of average at Cougar Reservoir to 108% of average at Timothy Lake.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 74% to 88% of average. Overall, forecasts remain similar to last month's report. Water users in the basin may have limited water supplies this coming summer.

Willamette Basin Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hills Creek Reservoir Inflow ^{1,2}	MAR-MAY	109	198	240	84%	280	370	285
	APR-JUL	97	181	220	80%	255	340	275
	APR-SEP	126	215	255	81%	295	380	315
MF Willamette R bl NF nr Oakridge ^{1,2}	MAR-MAY	310	520	610	85%	705	915	715
	APR-JUL	275	475	565	81%	655	860	695
	APR-SEP	340	555	650	82%	745	955	790
Lookout Point Reservoir Inflow ^{1,2}	MAR-MAY	320	540	640	86%	740	955	745
	APR-JUL	270	485	580	80%	680	890	725
	APR-SEP	360	575	675	82%	775	990	825
Fall Creek Reservoir Inflow ^{1,2}	MAR-MAY	45	97	120	88%	144	196	136
	APR-JUL	12.0	62	85	78%	108	158	109
	APR-SEP	17.3	68	91	81%	113	164	113
Cottage Grove Lake Inflow ^{1,2}	MAR-MAY	22	41	51	88%	62	91	58
	APR-JUL	10.4	24	32	78%	42	66	41
	APR-SEP	11.7	26	34	79%	43	68	43
Dorena Lake Inflow ^{1,2}	MAR-MAY	71	124	153	88%	185	265	174
	APR-JUL	38	80	104	76%	131	200	136
	APR-SEP	41	83	108	78%	135	205	139
McKenzie R bl Trail Bridge	MAR-MAY	160	183	199	90%	215	240	220
	APR-JUL	179	205	220	85%	240	265	260
	APR-SEP	245	275	295	86%	315	350	345
Cougar Lake Inflow ^{1,2}	MAR-MAY	117	163	187	89%	210	275	210
	APR-JUL	109	156	180	88%	205	270	205
	APR-SEP	130	180	205	87%	235	300	235
Blue Lake Inflow ^{1,2}	MAR-MAY	51	81	96	87%	114	156	110
	APR-JUL	34	58	71	85%	86	123	84
	APR-SEP	37	61	74	86%	89	126	86
McKenzie R nr Vida ¹	MAR-MAY	570	755	845	90%	940	1170	940
	APR-JUL	570	750	840	87%	940	1170	970
	APR-SEP	745	945	1050	88%	1150	1400	1190
Detroit Lake Inflow ^{1,2}	MAR-MAY	255	375	430	80%	485	605	540
	APR-JUL	210	325	375	71%	425	540	530
	APR-SEP	275	395	450	74%	505	630	610
Little North Santiam R nr Mehama ¹	MAR-MAY	74	111	128	82%	145	183	157
	APR-JUL	41	81	100	75%	118	159	133
	APR-SEP	51	91	109	77%	127	167	141
North Santiam R at Mehama ¹	MAR-MAY	335	535	625	79%	715	915	790
	APR-JUL	335	470	530	72%	590	725	740
	APR-SEP	420	555	620	74%	685	820	840

Willamette Basin Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Green Peter Lake Inflow ^{1,2}	MAR-MAY	187	260	300	87%	340	440	345
	APR-JUL	122	187	220	79%	260	350	280
	APR-SEP	136	200	235	80%	270	360	295
Foster Lake Inflow ^{1,2}	MAR-MAY	355	495	565	88%	640	825	645
	APR-JUL	230	355	420	79%	490	665	530
	APR-SEP	255	385	450	80%	520	700	565
South Santiam R at Waterloo ²	MAR-MAY	430	530	610	87%	690	820	700
	APR-JUL	285	375	445	80%	520	640	555
	APR-SEP	315	405	475	81%	550	665	590
Willamette R at Salem ^{1,2}	MAR-MAY	2810	3920	4480	87%	5080	6530	5170
	APR-JUL	1960	2970	3490	81%	4060	5460	4310
	APR-SEP	2280	3330	3870	82%	4450	5870	4730
Scoggins Reservoir Inflow ²	MAR-JUL	14.7	20	24	96%	28	33	25
Oak Grove Fk ab Powerplant	APR-JUL	65	80	90	78%	100	115	115
	APR-SEP	94	111	123	79%	135	152	155
Clackamas R above Three Lynx	APR-JUL	240	300	340	76%	375	435	450
	APR-SEP	310	370	410	77%	450	510	535
Clackamas R at Estacada	APR-JUL	335	420	475	76%	535	620	625
	APR-SEP	410	500	565	77%	625	715	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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Blue River	22.3	40.7	34.6	85.5
Cottage Grove	9.6	10.9	11.0	29.8
Cougar	49.0	103.0	85.4	155.2
Detroit	215.1	315.1	252.3	300.7
Dorena	18.1	23.5	26.5	70.5
Fall Creek	32.0	54.7	50.3	115.5
Fern Ridge	43.1	44.5	42.5	109.6
Foster	19.9	25.8	27.7	29.7
Green Peter	239.8	281.4	264.2	268.2
Hills Creek	150.9	164.1	154.3	200.2
Lookout Point	147.5	280.4	216.2	337.0
Timothy Lake	55.1	57.4	51.2	61.7
Henry Hagg Lake	47.6	48.6	45.2	53.0

Willamette Basin Summary for March 1, 2015

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	11	11%	71%
McKenzie Basin	6	11%	58%
Middle Fork Willamette Basin	7	19%	55%
North Santiam Basin	4	0%	54%
South Santiam Basin	4	0%	49%

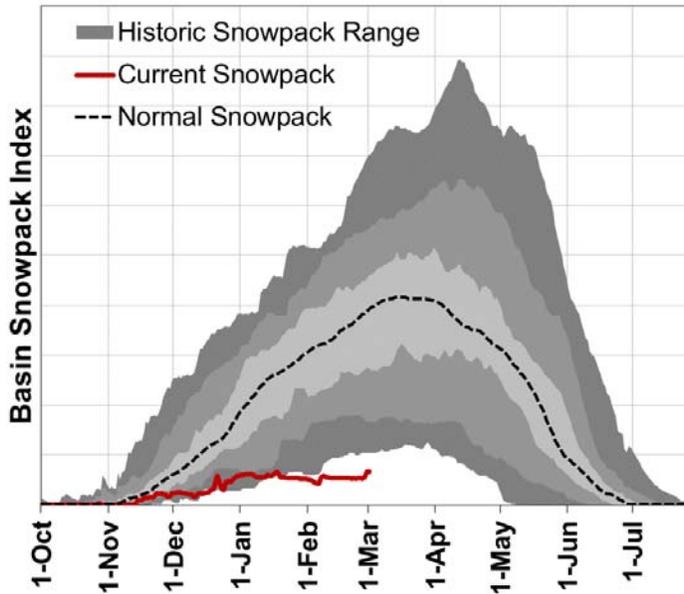
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Summit Lake SNOTEL	5610	1-Mar	28	9.7	17.3	31.2	31%
Irish Taylor SNOTEL	5540	1-Mar	23	9.4	22.1	30.8	31%
Cascade Summit SNOTEL	5100	1-Mar	18	6.4	17.6	26.2	24%
Roaring River SNOTEL	4950	1-Mar	3	1.0	13.5	25.0	4%
Holland Meadows SNOTEL	4930	1-Mar	2	0.6	4.2	18.0	3%
Hogg Pass SNOTEL	4790	1-Mar	2	0.3	14.4	20.1	1%
Mckenzie SNOTEL	4770	1-Mar	10	4.4	24.1	36.4	12%
Bear Grass SNOTEL	4720	1-Mar	4	0.9	22.3		
Beaver Creek #2 Snow Course	4220	25-Feb	0	0.0	6.6	9.0	0%
Salt Creek Falls SNOTEL	4220	1-Mar	1	0.2	7.1	16.3	1%
Beaver Creek #1 Snow Course	4210	25-Feb	0	0.0	8.8	14.0	0%
Mud Ridge SNOTEL	4070	1-Mar	4	1.0	16.4	24.1	4%
Little Meadows SNOTEL	4020	1-Mar	0	0.0	13.5	21.2	0%
Clear Lake SNOTEL	3810	1-Mar	0	0.0	7.1	12.4	0%
Santiam Jct. SNOTEL	3740	1-Mar	0	0.0	8.1	15.5	0%
Daly Lake SNOTEL	3690	1-Mar	0	0.0	4.0	11.3	0%
Marys Peak (Rev.) Snow Course	3580	26-Feb	0	0.0	0.0	2.3	0%
Jump Off Joe SNOTEL	3520	1-Mar	0	0.0	3.5	11.2	0%
Peavine Ridge SNOTEL	3420	1-Mar	0	0.0	6.1	11.2	0%
Clackamas Lake SNOTEL	3400	1-Mar	0	0.0	6.5	12.4	0%
Smith Ridge SNOTEL	3270	1-Mar	0	0.0	0.0		
Saddle Mountain SNOTEL	3110	1-Mar	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Mar	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Mar	0	0.0	4.3	7.5	0%
Seine Creek SNOTEL	2060	1-Mar	0	0.0	0.0	0.0	
Miller Woods SNOTEL	420	1-Mar	0	0.0	0.0		



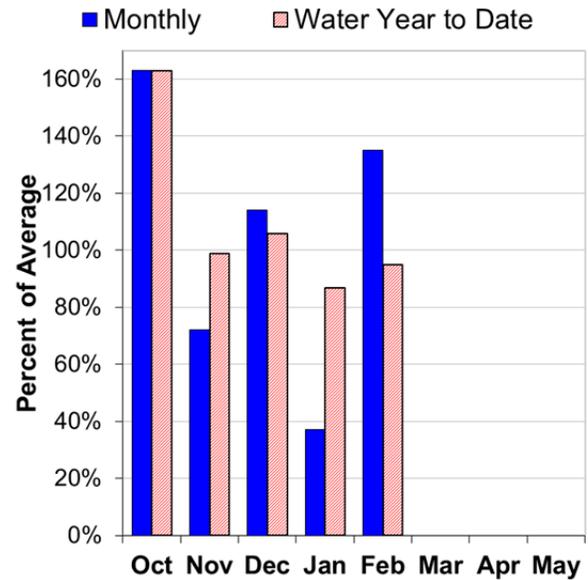
Rogue and Umpqua Basins

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 19% of normal. This is slightly higher than last month when the basin snowpack was 17% of normal. There are five long-term snow measuring sites in the basin that have set a new record low for March 1 snowpack. Out of 31 snow monitoring sites in the basin, there are 16 that are snow-free.

PRECIPITATION

February precipitation was 135% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 95% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 55% of average at Hyatt Prairie Reservoir to 114% of average at Applegate Reservoir.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 57% to 86% of average. Overall, forecasts increased slightly from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Rogue And Umpqua Basins Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hyatt Reservoir Inflow ²	APR-JUL	0.25	0.94	1.50	42%	2.8	4.7	3.6
South Umpqua R at Tiller	APR-JUL	70	121	156	81%	190	240	193
	APR-SEP	77	129	164	82%	198	250	200
Cow Ck nr Azalea ²	MAR-JUL	1.80	12.1	19.0	76%	26	36	25
	APR-JUL	0.74	7.1	11.4	78%	15.7	22	14.7
	APR-SEP	0.99	7.6	12.1	76%	16.6	23	15.9
South Umpqua R nr Brockway	APR-JUL	105	230	315	81%	400	520	390
	APR-SEP	116	240	330	80%	415	540	410
North Umpqua R at Winchester	APR-JUL	405	560	660	85%	760	915	775
	APR-SEP	505	660	765	86%	870	1030	890
Lost Creek Lk Inflow ²	MAR-JUL	375	460	520	78%	580	665	665
	MAR-SEP	455	550	615	78%	680	775	790
	APR-JUL	290	355	400	77%	445	510	520
	APR-SEP	380	455	505	78%	555	630	645
Rogue R at Raygold ²	APR-JUL	265	405	500	74%	595	735	675
	APR-SEP	365	510	610	76%	710	855	805
Rogue R at Grants Pass ²	APR-JUL	245	405	515	71%	625	785	725
	APR-SEP	325	500	615	73%	730	905	845
Applegate Lake Inflow ²	MAR-JUL	44	69	90	58%	113	152	155
	MAR-SEP	47	73	94	58%	118	158	161
	APR-JUL	28	46	61	56%	78	108	109
	APR-SEP	31	50	66	57%	83	113	115
Sucker Ck bl Ltl Grayback nr Holland	APR-JUL	18.0	32	42	76%	52	66	55
	APR-SEP	21	36	46	78%	55	70	59
Illinois R nr Kerby	APR-JUL	24	88	132	70%	176	240	188
	APR-SEP	27	91	135	70%	179	245	193

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

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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Applegate	28.5	18.7	25.0	75.2
Emigrant Lake	26.1	15.7	27.2	39.0
Fish Lake	4.2	4.2	5.0	8.0
Fourmile Lake	6.5	4.9	7.5	16.1
Howard Prairie	26.4	33.5	37.9	60.0
Hyatt Prairie	5.9	9.0	10.9	16.1
Lost Creek	227.4	242.1	219.0	315.0

Rogue And Umpqua Basins Summary for March 1, 2015

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	5	20%	11%
Middle Rogue Basin	8	16%	10%
North Umpqua Basin	7	16%	37%
South Umpqua Basin	10	1%	2%
Upper Rogue Basin	11	19%	31%

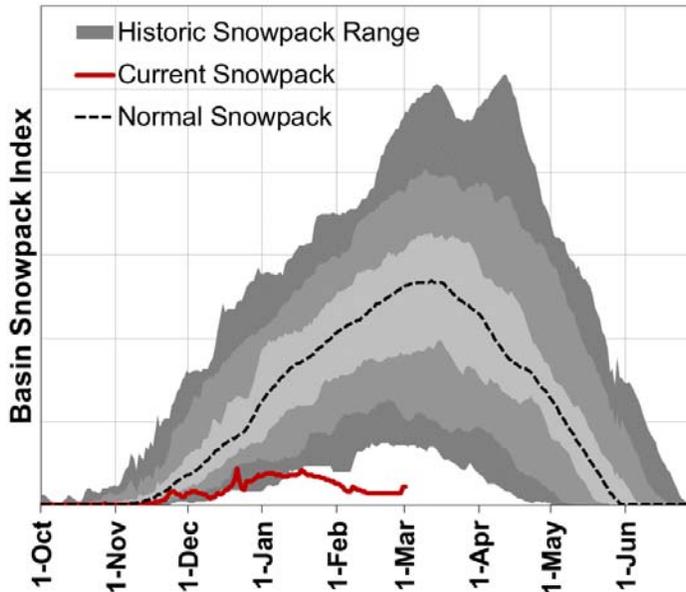
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Park H.Q. Rev Snow Course	6570	2-Mar	60	23.2	27.8	53.2	44%
Caliban (Alt.) Snow Course	6500	27-Feb	19	6.8	4.6	25.2	27%
Mt Ashland Switchback SC	6430	27-Feb	16	5.3	2.7	27.6	19%
Ski Bowl Road Snow Course	6070	27-Feb	4	1.5	1.5	21.0	7%
Big Red Mountain SNOTEL	6050	1-Mar	20	7.4	3.4	22.6	33%
Annie Springs SNOTEL	6010	1-Mar	32	12.4	13.2	35.1	35%
Fourmile Lake SNOTEL	5970	1-Mar	16	5.6	8.9	27.2	21%
Cold Springs Camp SNOTEL	5940	1-Mar	5	1.1	8.7	29.9	4%
Sevenmile Marsh SNOTEL	5700	1-Mar	4	0.3	9.0	28.7	1%
Summit Lake SNOTEL	5610	1-Mar	28	9.7	17.3	31.2	31%
Billie Creek Divide SNOTEL	5280	1-Mar	6	1.4	5.3	20.6	7%
Diamond Lake SNOTEL	5280	1-Mar	1	0.2	4.7	15.6	1%
Bigelow Camp SNOTEL	5130	1-Mar	0	0.0	0.0	10.6	0%
Beaver Dam Creek Snow Course	5120	27-Feb	0	0.0	0.0	10.9	0%
King Mountain 1 Snow Course	4760	26-Feb	0	0.0	0.0	5.0	0
Deadwood Junction Snow Course	4660	27-Feb	0	0.0	0.0	6.8	0%
Fish Lk. SNOTEL	4660	1-Mar	4	1.0	1.2	10.7	9%
Howard Prairie Snow Course	4580	27-Feb	0	0.0	0.0	6.6	0%
Howard Prairie SNOTEL	4580	1-Mar	1	0.3	0.0		
Siskiyou Summit (Rev.) SC	4560	27-Feb	0	0.0	0.0	5.4	0%
Red Butte 1 Snow Course	4460	26-Feb	0	0.0	0.5	9.8	0%
King Mountain SNOTEL	4340	1-Mar	1	0.2	0.0	2.4	8%
North Umpqua Snow Course	4200	26-Feb	0	0.0		10.4	0%
Red Butte 2 Snow Course	4050	26-Feb	0	0.0	0.0	2.9	0%
Trap Creek Snow Course	3830	26-Feb	0	0.0		8.8	0%
King Mountain 3 Snow Course	3680	26-Feb	0	0.0	0.0	0.0	
Silver Burn Snow Course	3680	2-Mar	0	0.0	0.0	11.5	0%
Red Butte 3 Snow Course	3500	26-Feb	0	0.0	0.0	0.1	0%
Toketee Airstrip SNOTEL	3240	1-Mar	0	0.0	0.0	0.8	0%
King Mountain 4 Snow Course	3050	26-Feb	0	0.0	0.0	0.0	
Red Butte 4 Snow Course	3000	26-Feb	0	0.0	0.0	0.0	



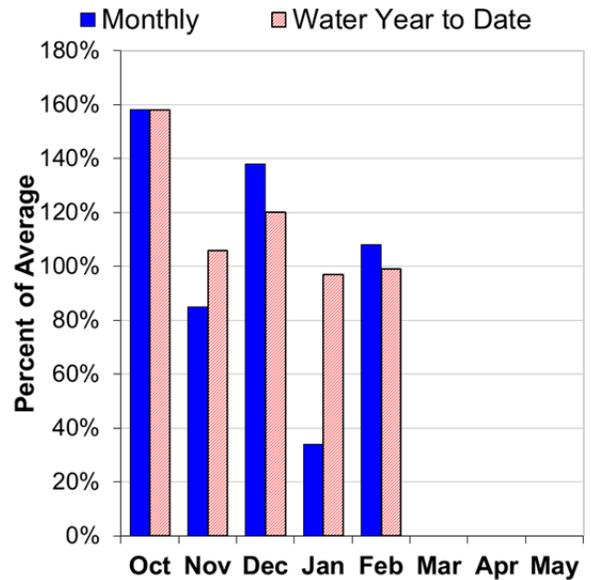
Klamath Basin

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 17% of normal. This is slightly lower than last month when the basin snowpack was 19% of normal. There are four long-term snow measuring sites in the basin that have set a new record low for March 1 snowpack. Out of 31 snow monitoring sites in the basin, there are 15 that are snow-free.

PRECIPITATION

February precipitation was 108% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 99% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 21% of average at Clear Lake to 117% of average at Upper Klamath Lake.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 32% to 48% of average. Overall, forecasts decreased from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Klamath Basin Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Clear Lake Inflow ²	MAR-JUL	2.0	8.6	31	46%	53	86	68
	APR-SEP	0.35	3.1	15.0	43%	27	44	35
Gerber Reservoir Inflow ²	MAR-JUL	0.64	5.1	14.0	44%	23	36	32
	APR-SEP	0.14	1.01	4.6	32%	10.1	18.1	14.4
Sprague R nr Chiloquin	MAR-JUL	5.1	56	95	37%	134	190	255
	MAR-SEP	12.1	70	110	40%	150	210	275
	APR-JUL	3.8	39	71	38%	103	150	188
	APR-SEP	3.6	52	85	40%	118	166	210
Williamson R bl Sprague nr Chiloquin	MAR-JUL	67	132	177	44%	222	287	400
	MAR-SEP	108	177	224	49%	271	340	460
	APR-SEP	80	133	169	48%	205	258	355
Upper Klamath Lake Inflow ^{1,2}	MAR-JUL	44	182	245	42%	310	445	580
	MAR-SEP	78	225	295	45%	365	510	655
	APR-SEP	56	158	205	43%	250	355	480

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

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

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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Clear Lake, CA	44.6	48.6	217.4	513.3
Gerber	15.5	13.2	50.3	94.3
Upper Klamath Lake	434.0	367.6	370.9	523.7

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Lost Basin	5	1%	1%
Sprague Basin	7	10%	27%
Upper Klamath Lake Basin	8	21%	34%
Williamson River Basin	5	30%	38%

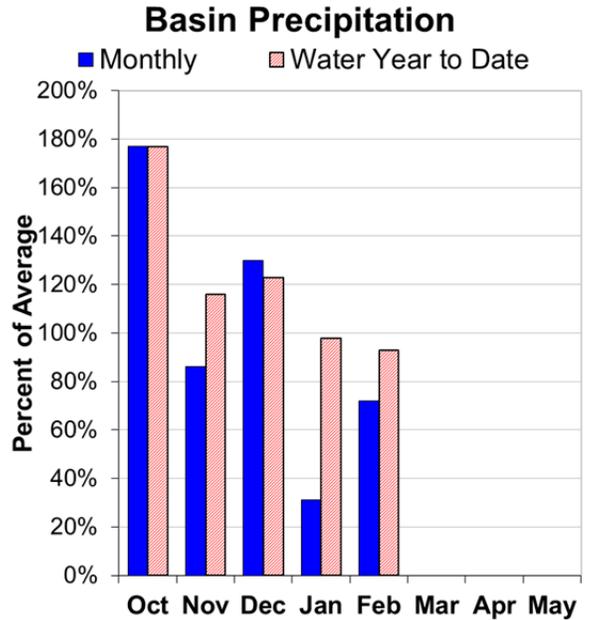
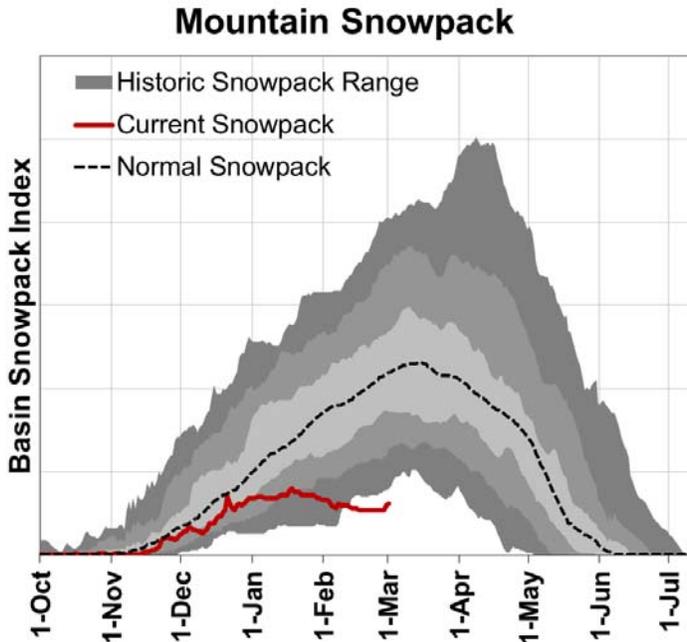
Klamath Basin Summary for March 1, 2015

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-Mar	22	6.5	7.2	14.1	46%
Swan Lake Mtn SNOTEL	6830	1-Mar	18	7.2	7.6		
Park H.Q. Rev Snow Course	6570	2-Mar	60	23.2	27.8	53.2	44%
Colvin Creek AM	6520	25-Feb	0	0.0		2.9	0%
Crazyman Flat SNOTEL	6180	1-Mar	1	0.1	4.8	14.8	1%
Ski Bowl Road Snow Course	6070	27-Feb	4	1.5	1.5	21.0	7%
Annie Springs SNOTEL	6010	1-Mar	32	12.4	13.2	35.1	35%
Finley Corrals AM	6000	25-Feb	0	0.0	3.6	13.2	0%
Fourmile Lake SNOTEL	5970	1-Mar	16	5.6	8.9	27.2	21%
Cold Springs Camp SNOTEL	5940	1-Mar	5	1.1	8.7	29.9	4%
Strawberry SNOTEL	5770	1-Mar	1	0.1	0.1	4.3	2%
Silver Creek SNOTEL	5740	1-Mar	1	0.4	3.6	10.3	4%
Quartz Mountain SNOTEL	5720	1-Mar	1	0.3	0.0	1.5	20%
Sevenmile Marsh SNOTEL	5700	1-Mar	4	0.3	9.0	28.7	1%
State Line AM	5690	25-Feb	0	0.0	0.0	4.3	0%
State Line SNOTEL	5680	1-Mar	0	0.0			
Sycan Flat AM	5580	25-Feb	0	0.0	0.0	6.2	0%
Sun Pass SNOTEL	5400	1-Mar	0	0.0	4.9		
Billie Creek Divide SNOTEL	5280	1-Mar	6	1.4	5.3	20.6	7%
Diamond Lake SNOTEL	5280	1-Mar	1	0.2	4.7	15.6	1%
Crowder Flat SNOTEL	5170	1-Mar	0	0.0	0.0	4.0	0%
Beaver Dam Creek Snow Course	5120	27-Feb	0	0.0	0.0	10.9	0%
Taylor Butte SNOTEL	5030	1-Mar	0	0.0	0.0	7.0	0%
Dog Hollow AM	4920	25-Feb	0	0.0	0.0	0.0	
Gerber Reservoir SNOTEL	4890	1-Mar	0	0.0	0.0	0.5	0%
Chemult Alternate SNOTEL	4850	1-Mar	0	0.0	0.1	8.1	0%
Deadwood Junction Snow Course	4660	27-Feb	0	0.0	0.0	6.8	0%
Fish Lk. SNOTEL	4660	1-Mar	4	1.0	1.2	10.7	9%
Howard Prairie SNOTEL	4580	1-Mar	1	0.3	0.0		
Howard Prairie Snow Course	4580	27-Feb	0	0.0	0.0	6.6	0%
Siskiyou Summit (Rev.) SC	4560	27-Feb	0	0.0	0.0	5.4	0%



Lake County and Goose Lake

March 1, 2015



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 22% of normal. This is significantly lower than last month when the basin snowpack was 34% of normal. There are four long-term snow measuring sites in the basin that have set a new record low for March 1 snowpack. Out of 22 snow monitoring sites in the basin, there are 9 that are snow-free.

PRECIPITATION

February precipitation was 72% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 93% of average.

RESERVOIR

Reservoir storage across the basin is well below average. As of March 1, storage at major reservoirs in the basin ranges from 35% of average at Drews Reservoir to 83% of average at Cottonwood Reservoir.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 40% to 51% of average. Overall, forecasts decreased from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Lake County And Goose Lake Basins Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Twentymile Ck nr Adel	MAR-JUL	2.7	6.3	9.6	36%	13.7	21	27
	APR-SEP	1.79	4.5	7.1	41%	10.3	16.0	17.4
Deep Ck ab Adel	MAR-JUL	21	31	40	51%	50	66	79
	APR-SEP	14.8	25	33	51%	43	59	65
Honey Ck nr Plush	MAR-JUL	2.1	4.5	6.7	39%	9.3	14.0	17.1
	APR-SEP	1.53	3.7	5.7	40%	8.2	12.6	14.1
Chewaucan R nr Paisley	MAR-JUL	20	31	40	48%	51	68	84
	APR-SEP	17.3	28	36	48%	45	61	75

* 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)	Capacity (KAF)
Cottonwood	3.7	0.8	4.4	8.7
Drews	11.2	13.8	32.4	63.0

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	8	21%	21%
Lake Abert Basin	6	10%	20%
Summer Lake Basin	13	22%	30%
Upper Pit Basin	3	13%	23%

Lake County And Goose Lake Basins Summary for March 1, 2015

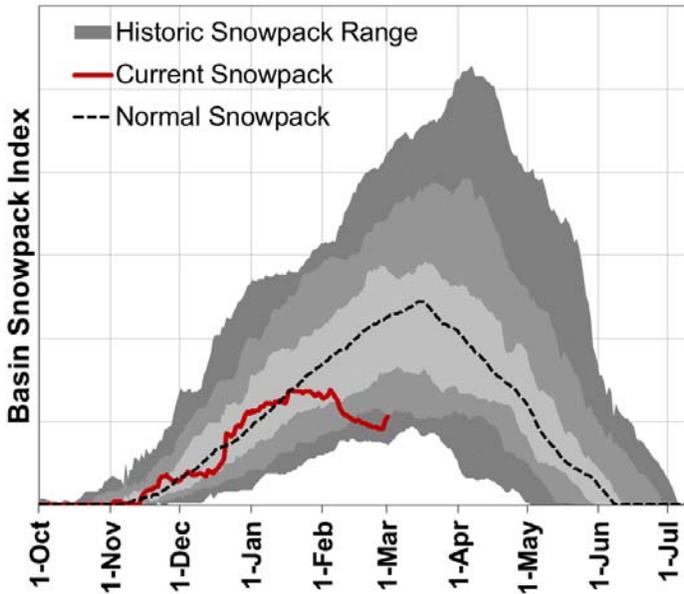
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	30-Yr Median	% of 30-Yr Median
Dismal Swamp SNOTEL	7360	1-Mar	36	14.0	11.6	24.5	57%
Summer Rim SNOTEL	7080	1-Mar	22	6.5	7.2	14.1	46%
Cedar Pass SNOTEL	7030	1-Mar	10	3.5	6.0	14.2	25%
Barley Camp AM	6890	25-Feb	7	2.9	3.7	14.4	20%
Patton Meadows AM	6800	1-Mar	4	1.6	4.0	14.4	11%
Sherman Valley AM	6640	1-Mar	0	0.0	1.1	11.3	0%
Bear Flat Meadow AM	6580	25-Feb	0	0.0	0.5	11.2	0%
Colvin Creek AM	6520	25-Feb	0	0.0		2.9	0%
Hart Mountain AM	6430	1-Mar	2	0.7	0.0	1.0	70%
Rogger Meadow AM	6360	1-Mar	5	2.0	1.1	10.1	20%
Adin Mountains Snow Course	6190	25-Feb	0	0.0	1.2	10.6	0%
Adin Mtn SNOTEL	6190	1-Mar	2	0.4	0.6	10.9	4%
Crazyman Flat SNOTEL	6180	1-Mar	1	0.1	4.8	14.8	1%
Finley Corrals AM	6000	25-Feb	0	0.0	3.6	13.2	0%
Camas Creek #3 Snow Course	5860	2-Mar	2	0.4	0.8	11.4	4%
Sheldon SCAN	5860	1-Mar	1	0.1	0.0	0.0	
Strawberry SNOTEL	5770	1-Mar	1	0.1	0.1	4.3	2%
Cox Flat AM	5750	25-Feb	0	0.0	0.0	5.8	0%
Silver Creek SNOTEL	5740	1-Mar	1	0.4	3.6	10.3	4%
State Line AM	5690	25-Feb	0	0.0	0.0	4.3	0%
Sycan Flat AM	5580	25-Feb	0	0.0	0.0	6.2	0%
Crowder Flat SNOTEL	5170	1-Mar	0	0.0	0.0	4.0	0%



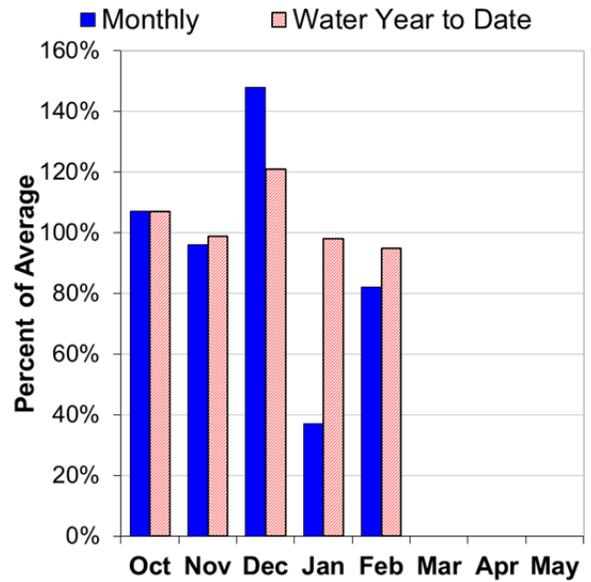
Harney Basin

March 1, 2015

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 50% of normal. This is significantly lower than last month when the basin snowpack was 78% of normal. March 1 snowpack at Silvies SNOTEL site set a new record low. Out of 23 snow monitoring sites in the basin, there are 8 that are snow-free.

PRECIPITATION

February precipitation was 82% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 95% of average.

STREAMFLOW FORECAST

As of March 1, summer streamflow forecasts in the basin range from 25% to 68% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Harney Basin Summary for March 1, 2015

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2015	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Silvies R nr Burns	MAR-JUL	4.9	17.8	31	25%	48	80	123
	APR-SEP	1.28	10.8	23	25%	38	70	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	26	38	48	67%	59	76	72
	APR-SEP	25	37	46	68%	56	74	68
Trout Ck nr Denio	MAR-JUL	0.24	1.48	2.9	33%	4.8	8.6	8.7
	APR-SEP	0.15	1.24	2.6	33%	4.4	8.0	8.0

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

Snowpack Summary by Basin	Basin Snowpack % of 30-Year Median		
	# of Sites	Current Yr	Last Yr
Alvord Lake Basin	6	59%	36%
Donner und Blitzen River Basin	5	56%	41%
Silvies River Basin	4	33%	49%
Upper Quinn Basin	5	34%	33%

Harney Basin Summary for March 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-Mar	36	10.2	8.2	18.3	56%
Trout Creek AM	7890	1-Mar	22	8.1	5.1	11.5	70%
Fish Creek SNOTEL	7660	1-Mar	48	20.0	12.1	21.3	94%
Govt Corrals AM	7400	1-Mar	20	7.4	4.9		
Oregon Canyon AM	7050	25-Feb	0	0.0	0.0	5.8	0%
Silvies SNOTEL	6990	1-Mar	12	3.8	5.3	14.6	26%
Pueblo Summit AM	6970	25-Feb	0	0.0	0.0	2.4	0%
Buckskin Lower SNOTEL	6915	1-Mar	5	0.5	3.9	8.1	6%
V Lake AM	6600	1-Mar	1	0.4	0.3	5.6	7%
Louse Canyon AM	6530	25-Feb	0	0.0	0.0	4.2	0%
Disaster Peak SNOTEL	6500	1-Mar	3	0.4	0.0	7.6	5%
Hart Mountain AM	6430	1-Mar	2	0.7	0.0	1.0	70%
Quinn Ridge AM	6270	25-Feb	0	0.0	0.0	2.0	0%
Snow Mountain SNOTEL	6230	1-Mar	16	4.7	4.2	9.8	48%
Lamance Creek SNOTEL	6000	1-Mar	0	0.0	0.6	11.0	0%
Blue Mountain Spring SNOTEL	5870	1-Mar	27	7.2	11.3	14.4	50%
Sheldon SCAN	5860	1-Mar	1	0.1	0.0	0.0	
Buck Pasture AM	5740	25-Feb	0	0.0	0.0	1.6	0%
Call Meadows AM	5380	25-Feb	0	0.0	0.0	4.4	0%
Rock Springs SNOTEL	5290	1-Mar	6	0.8	1.4	6.2	13%
Starr Ridge SNOTEL	5250	1-Mar	4	0.7	4.5	6.2	11%
Lake Creek R.S. SNOTEL	5240	1-Mar	13	4.4	5.9	10.3	43%
Buckskin Lake AM	5190	25-Feb	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>LONG-TERM AVERAGE VALUE</i>
		----- <i>CHANCE OF EXCEEDING</i> -----			
		90%	50%	10%	
Owyhee R nr Rome	2000 cfs	**Observed	Jan 21	**	May 6
Owyhee R nr Rome	1000 cfs	**Observed	Feb 13	**	May 18
Owyhee R nr Rome	500 cfs	**Observed	Feb 19	**	Jun 2

UPPER JOHN DAY BASIN					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i>			<i>LONG-TERM AVERAGE VALUE</i>
		----- <i>CHANCE OF EXCEEDING</i> -----			
		90%	50%	10%	
John Day R at Service Creek	Average Daily Flow on Aug. 1st	25	147	370	271

UPPER DESCHUTES AND CROOKED BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i>			<i>LONG-TERM AVERAGE VALUE</i>
		----- <i>CHANCE OF EXCEEDING</i> -----			
		90%	50%	10%	
Crane Prairie Inflow *	Date of Peak	May 9	May 25	Jun 10	May 25
Crane Prairie Inflow	Peak Flow	197	335	475	403
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	137	185	235	269
Prineville Reservoir Inflow	113 cfs	Apr 20	May 13	Jun 5	June 3
Prineville Reservoir Inflow	75 cfs	Apr 26	May 20	Jun 13	June 11
Prineville Reservoir Inflow	50 cfs	May 3	May 28	Jun 22	June 19
Whychus Creek nr Sisters	100 cfs	Jul 14	Aug 9	Sep 4	August 16

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

ROGUE AND UMPQUA BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
South Umpqua R nr Brockway *	90 cfs	Jul 10	Jul 28	Aug 15	August 8
South Umpqua R at Tiller	140 cfs	Jun 12	Jul 3	Jul 24	July 11
South Umpqua R at Tiller	90 cfs	Jun 30	Jul 22	Aug 13	August 1
South Umpqua R at Tiller	60 cfs	Jul 21	Aug 18	Sep 15	August 28

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

LAKE COUNTY AND GOOSE LAKE BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Deep Ck ab Adel	100 cfs	May 10	Jun 1	Jun 23	June 17
Honey Ck nr Plush	100 cfs	** Flow did not exceed this level **			May 16
Honey Ck nr Plush	50 cfs	** Flow did not exceed this level **			June 4
Twentymile Ck nr Adel	50 cfs	**Observed	Feb 11	**	May 30
Twentymile Ck nr Adel	10 cfs	May 29	Jun 21	Jul 14	July 7

HARNEY BASIN					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Silvies R nr Burns	400 cfs	Apr 6	May 5	Jun 3	May 21
Silvies R nr Burns	200 cfs	Apr 13	May 12	Jun 10	June 2
Silvies R nr Burns	100 cfs	Apr 22	May 24	Jun 25	June 13
Silvies R nr Burns	50 cfs	May 12	Jun 16	Jul 21	July 3
Donner Und Blitzen R nr Frenchglen	200 cfs	May 12	Jun 3	Jun 25	June 20
Donner Und Blitzen R nr Frenchglen	100 cfs	Jun 3	Jun 23	Jul 13	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.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.

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JOHN DAY BASIN
Streamflow Forecasts - February 1, 2013

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		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	10.2	8.5
	APR-SEP	5.2	6.8	7.9	90	9.0	10.6	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.2	5.4	6.9	99	8.4	10.6	7.0
	APR-SEP	1.7	3.3	4.4	90	5.5	7.1	4.9

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

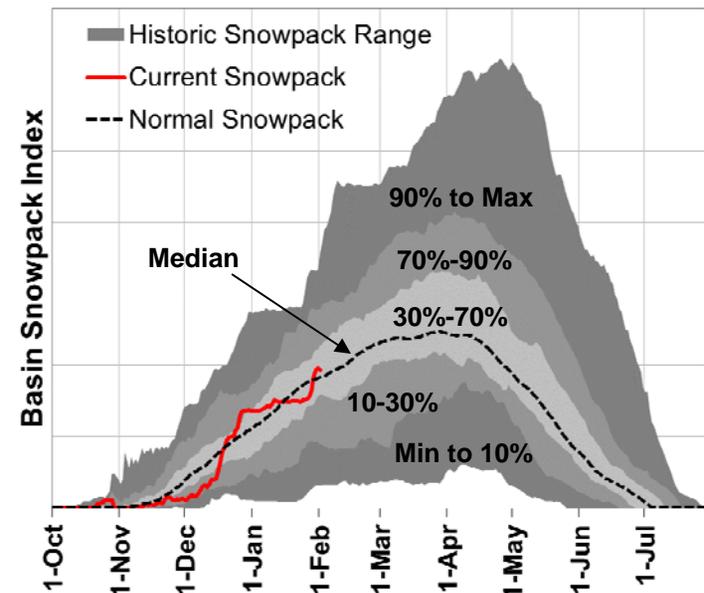
Interpreting Snowpack Plots

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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Official Business



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

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