



United States  
Department of  
Agriculture



Natural Resources  
Conservation  
Service

# Oregon Basin Outlook Report

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## February 1, 2014



**Tom Perkins waves goodbye on final snow survey** *Photo courtesy of Spencer Miller (NRCS)*

NRCS hydrologist Tom Perkins waves goodbye to his career after 40 years of federal service. He spent his last day before retirement measuring the meager snowpack at Mt. Hood SNOTEL site. A foot of fresh snow made the current conditions appear better than they actually were though. The snowpack measurement at Mt Hood SNOTEL was only 57% of normal, as of February 1.

As of February 1, it appears that the 2014 snowpack season will go down in history as one of the lowest on record for many parts of Oregon. About two dozen Oregon SNOTEL and snow courses have broken their previous record lows for snowpack levels. Many other areas in Oregon are the second or third driest on record. In addition, January was the fourth month in a row with below average precipitation and reservoirs are storing less water than last year. Water users should prepare for well-below average streamflows for most of Oregon's rivers and streams this summer.

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# General Outlook

February 1, 2014

## SUMMARY

Oregon water users should prepare for limited water supplies this summer, especially in the southern and eastern basins of the state. The past four months have been unusually dry, resulting in very low snowpack levels across Oregon, except for the Grande Ronde basin. Many snow measurement sites have set new record lows for snowpack levels. In some areas, snow surveyors have been able to drive to measurement locations where they usually arrive by ski or snowmobile. While there is still time for improvement in mountain snowpack levels this winter, the chance of a full recovery to normal peak snowpack levels is extremely slim at this point.

Based on February 1 conditions, summer streamflows are expected to be well below average across Oregon this year. Additionally, many of the state's reservoirs are storing less water than this time last year, creating another source of concern about limited water supplies for this coming summer. The latest Drought Monitor update shows most of Oregon in a severe drought status. Emergency drought declarations for several southern Oregon counties are likely to be announced by the Oregon governor's office during February. Areas of the state that depend on snowmelt for a significant part of their water supply are likely to experience water shortages this summer. Water users in these areas should prepare to conserve water this summer unless a significant improvement in snowpack conditions occurs soon. Water users can monitor current drought conditions at the Drought Monitor website: <http://droughtmonitor.unl.edu/>.

## SNOWPACK

The mountain snowpack did little in the way of improving since last month. As of February 1, the snow is less than 40% of normal for most of the snow monitoring sites across Oregon. About two dozen snow course and SNOTEL sites have set new record lows for February 1 snowpack measurements. Several long-term snow monitoring sites even surpassed the previous record lows set during the notoriously dry 1977 winter. Instead of new snow during the last week of January, over 2 inches of rain fell on the already shallow snowpack in parts of southern and central Oregon. The Rogue, Umpqua, Klamath and Lake County basins have the worst snowpack conditions in the state, with less than a quarter of the normal snowpack as of February 1. The only bright spot in the state is in the northeast corner of Oregon, where five SNOTEL sites in the headwaters of the Grande Ronde River are recording near normal snowpack levels.

In general, the snowpack season reaches its peak between mid-March in southern Oregon and mid-April in northern Oregon. In order to reach a near normal snowpack by the peak, the mountains would have to experience snow storms with greater than 200% of normal precipitation for the next two months. This record-breaking rate of storms hasn't happened in the last 34 years since SNOTEL data collection began. While there is not much chance of reaching normal snowpack levels before snowmelt season begins, there is still time for Oregon's mountain to receive enough snow to lessen the impact of the current drought conditions across the state.

## PRECIPITATION

January marks the fourth month in a row of below average precipitation in Oregon. January precipitation ranged from 31% of average in the Lake County and Goose Lake basin up to 77% of average in the Hood, Sandy and Lower Deschutes basins. Only two storm cycles were able to skirt past the stubborn ridge of blocking high pressure during the month of January. The first

system moved through in mid-January allowing over a foot of new snow to accumulate in parts of the Cascade mountains, while southern Oregon's mountains received a half inch of precipitation or nothing at all. The second storm came during the last week of the month, delivering significant snowfall to parts of northern Oregon, while the southern part of the state received mostly rain on top of an already meager snowpack. However, because January is normally a stormy month that delivers significant moisture, these two storms were not able to keep up with the normal amount of January precipitation that falls in Oregon's mountains.

The northern Oregon basins, along the Columbia River corridor, have received the best precipitation for the water year, which began on October 1. In general, October thru January precipitation in this region ranged from 50-75% of average. Several SNOTEL sites in the Grande Ronde basin are the only ones in the state to receive near normal amount of precipitation for the water year so far. Conversely, the southern and central regions of Oregon only received 30-50% of precipitation for the October thru January period. As of February 1, the Lake County and Goose Lake basin has the lowest water year precipitation totals in the state.

## **RESERVOIRS**

As of February 1, reservoir storage in the southern and eastern basins of Oregon is well below average. Many reservoirs in these regions, such as Applegate, Owyhee and Drews, are at critically low levels and are far behind where they typically are on February 1. In contrast, reservoirs in the Willamette, Upper Deschutes and Crooked basins are faring better in general and most of them are storing near average amounts for this time of year.

The February 1 storage at 26 major Oregon reservoirs analyzed in this publication was 60% percent of normal. As of February 1, water storage at these reservoirs totaled 1014 thousand acre feet (kaf), representing 31 percent of useable capacity. Last year at this time these same reservoirs stored 1476 kaf of water, or 46 percent of useable capacity.

## **STREAMFLOW**

Observed flows in Oregon's rivers and streams have been below average for the last couple of months as a result of extended periods of dry weather. Based on the current dry conditions and very low snowpack levels, streamflows across the state are expected to remain below average through the summer months. Currently, April through September streamflow forecasts are predicted to be less than half of average across much of the southern and eastern basins of Oregon. Summer flows are forecast to be slightly higher in the Willamette, Umatilla and Grande Ronde basins, where April thru September streamflow forecasts range from about 70 to 90% of average, as of February 1. A large number of strong storms during February and March will be necessary to improve the snowpack and water supply outlook. Unless this happens, water users across significant portions of Oregon will likely experience limited water supplies this summer.

While current snowpack values are consistently low across the state, readers will notice a wide range of predictions for water supplies this coming spring and summer. The reason for this lies in the underlying hydrology of different watersheds as well as the uncertainty around late winter and spring rain storms. Watersheds that receive the majority of their annual precipitation in the form of snow (Klamath basin, for example) are seeing the lowest streamflow forecasts. These watersheds see the majority of runoff come from snowmelt and rarely receive spring precipitation sufficient to make up for a meager winter snowpack. However, in watersheds that are more influenced by spring rains (Willamette basin, for example), a meager winter snowpack doesn't always mean low runoff. The rivers in these areas may see significant volumes of water delivered later in the season due to rain rather than snowmelt. As a result, predictions tend to stay closer to normal for these rivers.

A summary of streamflow forecasts for Oregon follows:

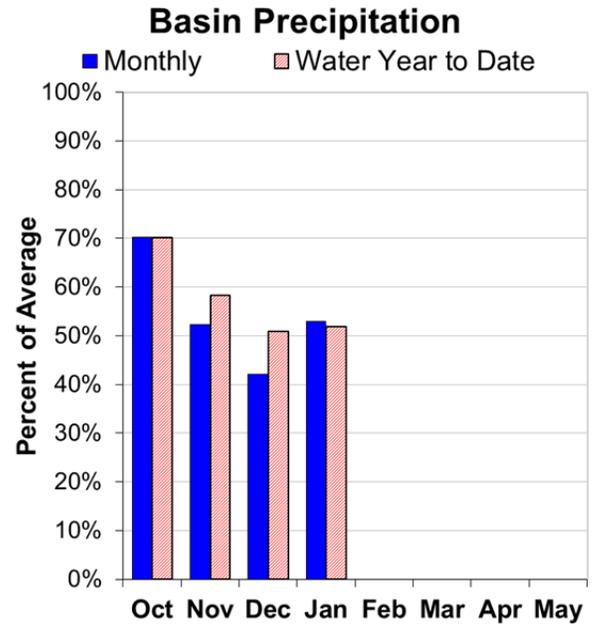
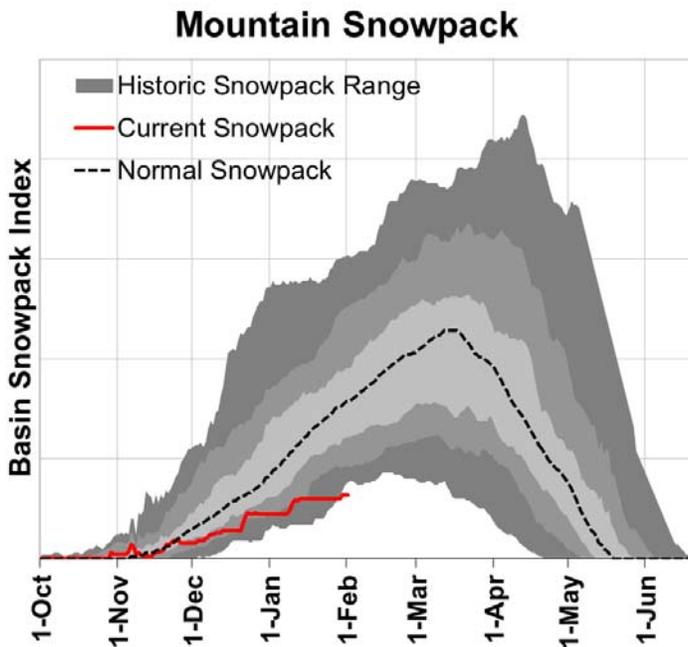
<b>STREAM</b>	<b>Median Forecast (April through September)</b>	
	<b>Volume (Acre-Foot)</b>	<b>Percent of Average</b>
Owyhee Reservoir Inflow	176,000	43
Grande Ronde R at Troy	1,040,000	79
Umatilla R at Pendleton	136,000	89
Deschutes R at Benham Falls	355,000	73
Willamette R at Salem	3,640,000	77
Rogue R at Raygold	435,000	54
Upper Klamath Lake Inflow	150,000	32
Silvies R nr Burns	11,000	12

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

February 1, 2014



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 39% of normal. This is significantly lower than last month when the snowpack was 53% of normal. Four long-term snowpack monitoring sites in the basin have set new record low levels for February 1 snow water equivalent. One of the record low sites is Columbia Basin Aerial Marker, which has been measured continuously since 1964.

### PRECIPITATION

January precipitation was 53% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 52% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 25% of average and 11% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 22% to 43% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for significantly limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:

Ontario - (541) 889-7637

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

OWYHEE AND MALHEUR BASINS  
Streamflow Forecasts - February 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)		
		90%		70%		50%			30%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)
		Chance Of Exceeding *								
Malheur R nr Drewsey	FEB-JUL	8.2	20	31	24	44	68	128		
	APR-JUL	0.95	7.3	15.0	20	25	46	75		
	APR-SEP	2.9	9.6	16.4	22	25	41	74		
NF Malheur R at Beulah (2)	FEB-JUL	4.4	12.8	21	25	31	50	85		
Owyhee R nr Rome	FEB-JUL	10.0	55	193	33	300	500	580		
	FEB-SEP	11.9	48	205	34	310	505	595		
	APR-SEP	8.0	40	144	39	220	320	365		
Owyhee R bl Owyhee Dam (2)	FEB-JUL	68	151	225	35	315	470	635		
	FEB-SEP	85	173	250	38	340	505	665		
	APR-SEP	55	119	176	43	245	365	405		

OWYHEE AND MALHEUR BASINS  
Reservoir Storage (1000 AF) - End of January

OWYHEE AND MALHEUR BASINS  
Watershed Snowpack Analysis - February 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Beulah Res	60.0	15.8	17.9	26.0	Owyhee	10	43	35
Bully Creek	30.0	6.1	9.2	12.5	Upper Malheur	4	49	37
Lake Owyhee Near Nyssa	715.0	77.8	280.7	345.3	Jordan Creek	2	39	28
Warm Springs	191.0	14.5	62.3	68.5	Willow Creek	2	14	13

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

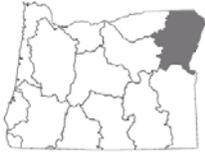
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

Ontario - (541) 889-7637

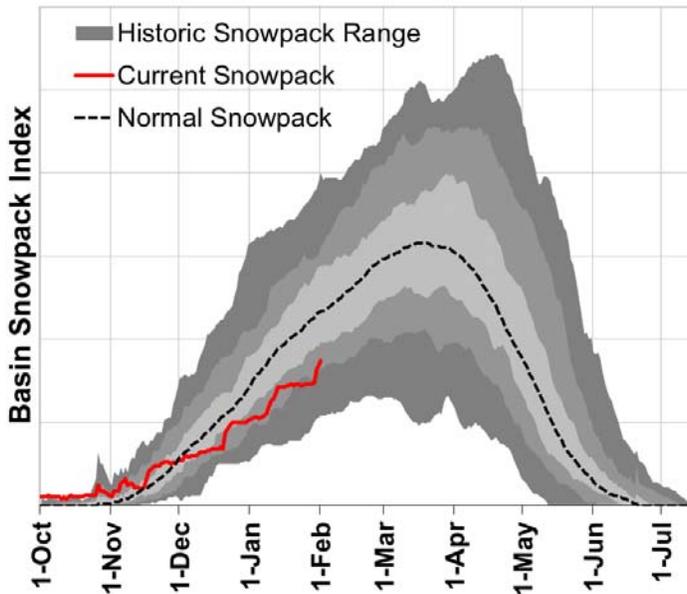
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



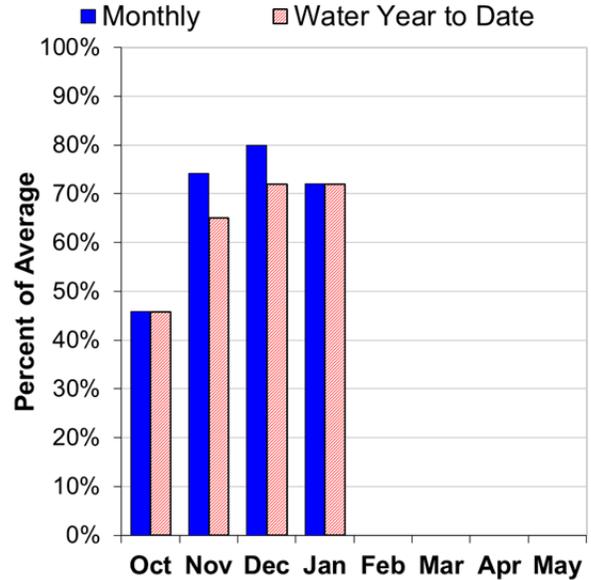
# Grande Ronde, Powder, Burnt and Imnaha Basins

February 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 72% of normal. Five SNOTEL sites in the Grande Ronde River headwaters have a near normal snowpack. Elsewhere, the snowpack ranges from 18 to 76% of normal. The Burnt River snowpack is the lowest in this region at 37% of normal. Schneider Meadows SNOTEL set a new record low for snowpack, replacing the previous record set in 2001.

### PRECIPITATION

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

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 31% of average and 15% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 29% to 86% of average. Overall, forecasts decreased significantly from last month's report. Water users in the Power, Burnt, and Imnaha basins should prepare for limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:  
 Enterprise- (541) 426-4588; Baker City - (541) 523-7121; LaGrande - (541) 963-4178  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

GRANDE RONDE, POWDER, BURNT AND IMNAHA BASINS  
Streamflow Forecasts - February 1, 2014

Forecast Point	Forecast Period	Future Conditions Chance Of Exceeding *				Wetter		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Burnt R nr Hereford	FEB-JUL	7.2	13.1	18.2	36	24	34	51
	APR-SEP	2.1	6.1	10.1	29	15.1	24	35
Deer Ck nr Sumpter	FEB-JUL	2.9	6.2	8.5	43	10.8	14.1	19.7
Powder R nr Sumpter	FEB-JUL	9.0	23	32	48	41	55	67
	APR-JUL	4.0	15.9	24	45	32	44	53
	APR-SEP	2.9	15.5	24	44	33	45	54
Wolf Ck Reservoir Inflow (2)	MAR-JUN	4.1	7.5	9.8	54	12.1	15.5	18.1
Pine Ck nr Oxbow	FEB-JUL	60	101	129	59	157	198	220
	APR-JUL	36	65	84	54	103	132	157
	APR-SEP	38	67	87	53	107	136	163
Imnaha R at Imnaha	APR-JUL	89	136	167	65	198	245	255
	APR-SEP	100	149	182	65	215	265	280
Lostine R nr Lostine	APR-JUL	79	88	93	88	98	107	106
	APR-SEP	83	93	99	86	105	115	115
Bear Ck nr Wallowa	APR-SEP	43	51	56	86	61	69	65
Catherine Ck nr Union	APR-JUL	35	43	49	82	55	63	60
	APR-SEP	38	46	52	81	58	66	64
Grande Ronde R at Troy (1)	MAR-JUL	795	1080	1210	80	1340	1630	1510
	APR-SEP	630	910	1040	79	1170	1450	1310

GRANDE RONDE, POWDER, BURNT AND IMNAHA BASINS  
Reservoir Storage (1000 AF) - End of January

GRANDE RONDE, POWDER, BURNT AND IMNAHA BASINS  
Watershed Snowpack Analysis - February 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Phillips Lake	73.5	11.0	28.5	32.0	Upper Grande Ronde	7	96	82
Thief Valley	17.4	3.1	13.7	14.1	Wallowa	4	108	99
Unity	25.2	3.8	6.8	11.7	Imnaha	4	80	73
Wallowa Lake	37.5	18.2	20.9	15.1	Powder	11	72	63
Wolf Creek	10.4	2.7	2.7	2.8	Burnt	4	39	37

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table. The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

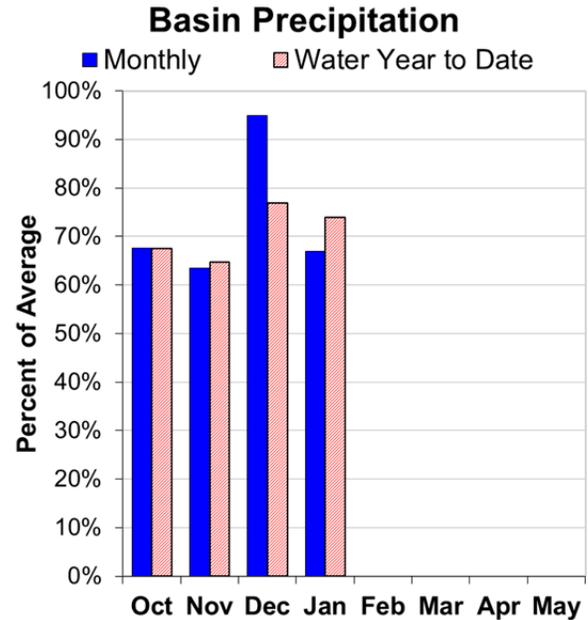
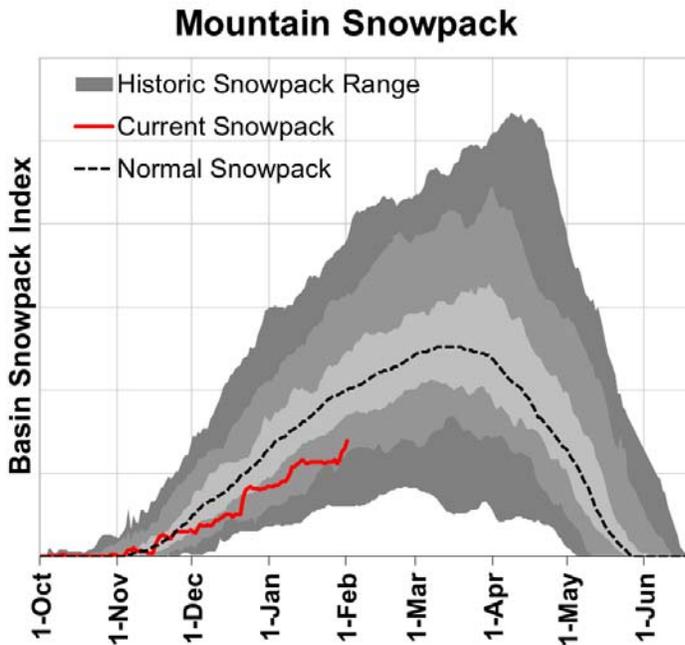
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For more information contact your local Natural Resources Conservation Service office:  
Enterprise- (541) 426-4588; Baker City - (541) 523-7121; LaGrande - (541) 963-4178  
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



# Umatilla, Walla Walla, and Willow Basins

February 1, 2014



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 70% of normal. This is slightly higher than last month when the snowpack was 65% of normal.

### PRECIPITATION

January precipitation was 67% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 74% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 75% of average and 29% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 55% to 92% of average. Overall, forecasts decreased significantly from last month's report. Water users in some parts of the basin should prepare for limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:  
 Pendleton - (541) 278-8049; Heppner - (541) 676-5021; Condon - (541) 384-2671  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

UMATILLA, WALLA WALLA AND WILLOW BASINS  
Streamflow Forecasts - February 1, 2014

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)	
Butter Ck nr Pine City	MAR-JUL	0.75	4.5	7.0	47	9.5	13.2	14.9
	APR-SEP	0.86	3.6	5.4	55	7.2	9.9	9.8
McKay Ck nr Pilot Rock	APR-SEP	5.4	16.5	24	77	32	43	31
Rhea Ck nr Heppner	FEB-JUL	0.40	3.0	5.7	42	8.3	12.0	13.6
Umatilla R ab Meacham Ck nr Gibbon	MAR-SEP	70	85	95	90	105	120	106
	APR-JUL	44	56	65	88	74	86	74
	APR-SEP	49	61	70	88	79	91	80
Umatilla R at Pendleton	MAR-SEP	148	182	205	91	230	260	225
	APR-JUL	82	111	131	89	151	180	147
	APR-SEP	86	116	136	89	156	186	153
SF Walla Walla R nr Milton-Freewater	MAR-SEP	60	68	74	93	80	88	80
	APR-JUL	37	44	48	89	52	59	54
	APR-SEP	49	56	61	92	66	73	66
Willow Ck ab Willow Ck Lake nr Hepp	FEB-JUL	0.050	3.4	5.7	48	8.0	11.4	11.8
	APR-JUL	0.50	2.0	3.5	50	5.2	7.6	7.0

UMATILLA, WALLA WALLA AND WILLOW BASINS  
Reservoir Storage (1000 AF) - End of January

UMATILLA, WALLA WALLA AND WILLOW BASINS  
Watershed Snowpack Analysis - February 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Cold Springs	50.0	11.4	10.0	16.1	Walla Walla	3	82	68
Mckay	73.8	23.1	26.8	29.8	Umatilla	5	73	72
Willow Creek	1.8	3.7	4.4	4.2	McKay Creek	3	87	83

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

Pendleton - (541) 278-8049; Heppner - (541) 676-5021; Condon - (541) 384-2671

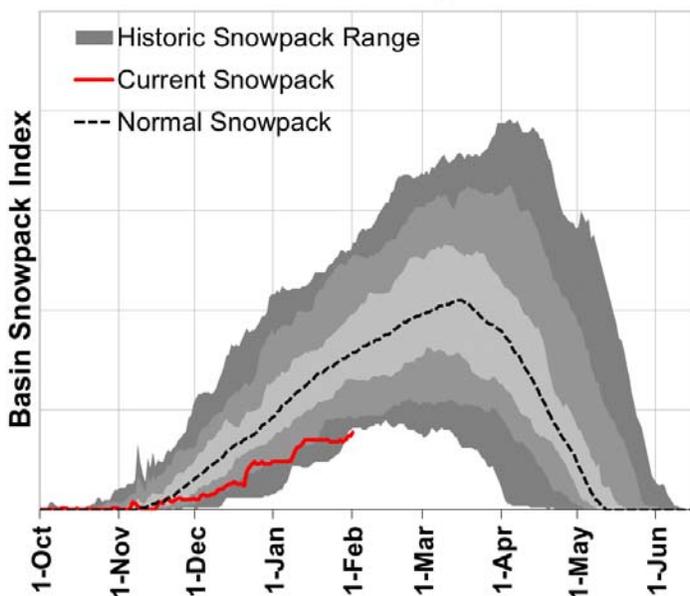
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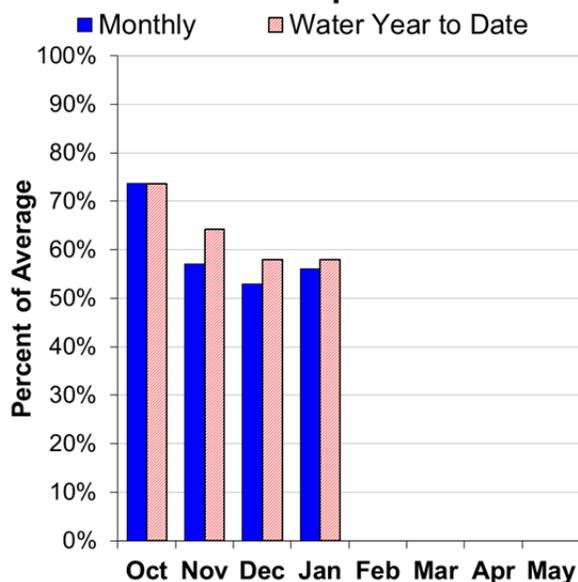
# John Day Basin

February 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 50% of normal. This is slightly lower than last month when the snowpack was 51% of normal. Three long-term snowpack monitoring sites (Tipton, Derr, and Blue Mountain Springs SNOTEL) have set new record low levels for snow water equivalent as of February 1.

### PRECIPITATION

January precipitation was 56% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 58% of average.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 20% to 71% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:  
John Day - (541) 575-0135

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

JOHN DAY BASIN  
Streamflow Forecasts - February 1, 2014

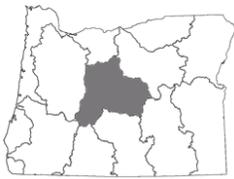
Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)		
Strawberry Ck nr Prairie City	MAR-JUL	1.33	2.9	3.9	46	4.9	6.5	8.5				
	APR-SEP	1.32	2.9	4.0	45	5.1	6.7	8.8				
Mountain Ck nr Mitchell	FEB-JUL	0.60	1.20	1.50	21	3.0	5.2	7.0				
	APR-SEP	0.20	0.60	1.00	20	2.1	3.7	4.9				
Camas Ck nr Ukiah	MAR-JUL	20	30	36	73	42	52	49				
	APR-SEP	10.0	18.9	25	71	31	40	35				
MF John Day R at Ritter	MAR-JUL	30	62	83	53	104	136	156				
	APR-SEP	22	49	68	54	87	114	126				
NF John Day R at Monument	MAR-JUL	196	345	445	58	545	695	765				
	APR-SEP	145	270	355	59	440	565	600				

JOHN DAY BASIN Reservoir Storage (1000 AF) - End of January					JOHN DAY BASIN Watershed Snowpack Analysis - February 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					North Fork John Day	7	58	60
					John Day above Kimberly	5	45	39

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.  
The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

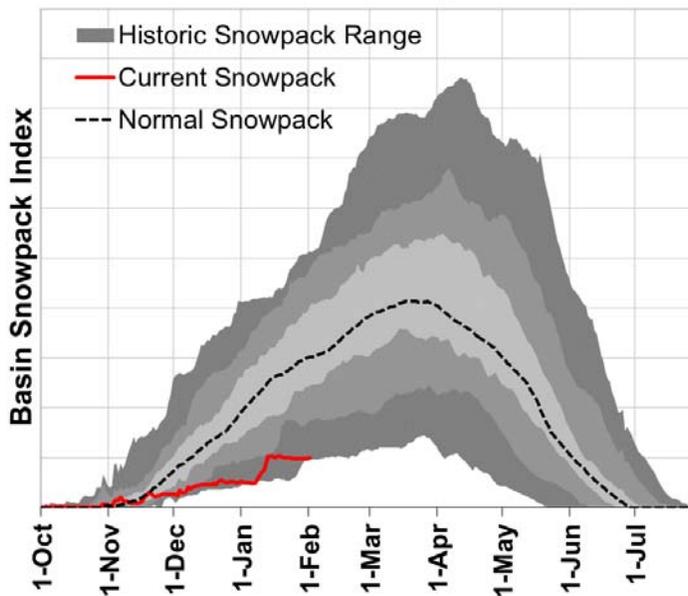
For more information contact your local Natural Resources Conservation Service office:  
John Day - (541) 575-0135  
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



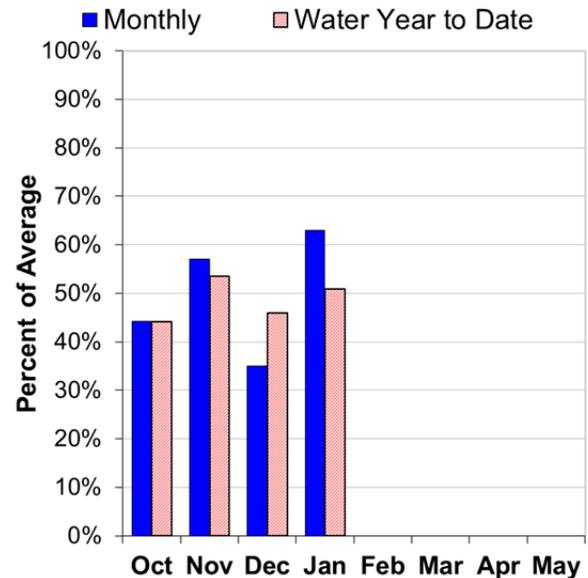
# Upper Deschutes and Crooked Basins

February 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 34% of normal. This is slightly higher than last month when the snowpack was 27% of normal. Four long-term snowpack monitoring sites in the basin have set new record low levels for snow water equivalent as of February 1. One of the record low sites is Tangent Snow Course, which has been measured continuously by the NRCS since 1952.

### PRECIPITATION

January precipitation was 63% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 51% of average.

### RESERVOIR

Reservoir storage across the basin is currently slightly above average. As of February 1, storage at published reservoirs was 102% of average and 66% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 10% to 73% of average. Overall, forecasts decreased slightly from last month's report. Water users in the Crooked River Basin should prepare for limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:  
Redmond (541) 923-4358

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

UPPER DESCHUTES AND CROOKED BASINS  
Streamflow Forecasts - February 1, 2014

Forecast Point	Forecast Period	Future Conditions				30-Yr Avg.		
		<<==== Drier =====>>		Chance Of Exceeding *		Wetter >>>>====>>		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	(1000AF)
Deschutes R bl Snow Ck nr La Pine	FEB-JUL	4.8	12.7	18.0	44	23	31	41
	FEB-SEP	11.1	21	27	43	33	43	63
	APR-JUL	3.5	9.1	12.9	43	16.7	22	30
	APR-SEP	8.7	16.6	22	42	27	35	52
Crane Prairie Reservoir Inflow (2)	FEB-JUL	17.6	28	35	46	42	52	76
	FEB-SEP	28	41	50	47	59	72	107
	APR-JUL	12.6	20	25	45	30	37	56
	APR-SEP	18.2	29	37	42	45	56	88
Crescent Ck nr Crescent (2)	FEB-JUL	0.20	1.51	6.0	31	10.5	17.1	19.6
	FEB-SEP	0.22	2.1	6.8	31	11.5	18.4	22
	APR-JUL	0.15	1.35	3.8	25	7.3	12.4	15.0
	APR-SEP	0.20	1.39	4.5	26	8.1	13.4	17.4
Little Deschutes R nr La Pine (2)	FEB-JUL	7.1	16.0	23	26	37	58	89
	FEB-SEP	5.6	16.0	25	27	41	63	94
	APR-JUL	3.8	8.8	13.0	21	21	32	63
	APR-SEP	3.4	8.3	14.0	20	23	37	69
Whychus Ck nr Sisters	FEB-JUL	18.7	23	26	60	29	33	43
	FEB-SEP	24	29	33	60	37	42	55
	APR-JUL	17.3	19.5	21	60	22	25	35
	APR-SEP	22	26	28	60	30	34	47
Prineville Reservoir Inflow (2)	FEB-JUL	2.0	10.2	30	15	71	132	205
	FEB-SEP	2.0	10.2	30	15	72	134	205
	APR-JUL	0.000	4.1	10.0	10	34	69	102
	APR-SEP	0.000	4.1	10.0	10	35	71	102
Ochoco Reservoir Inflow (2)	FEB-JUL	3.6	6.0	9.0	23	15.7	26	40
	FEB-SEP	1.60	6.0	9.6	24	16.6	27	40
	APR-JUL	0.21	0.84	3.0	14	7.0	12.8	21
	APR-SEP	0.20	1.00	3.0	15	7.2	13.3	20
Deschutes R at Benham Falls nr Bend	FEB-JUL	275	315	340	74	365	405	460
	FEB-SEP	385	435	465	74	495	545	625
	APR-JUL	193	215	230	72	245	265	320
	APR-SEP	300	335	355	73	375	410	485

For more information contact your local Natural Resources Conservation Service office:

Redmond (541) 923-4358

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

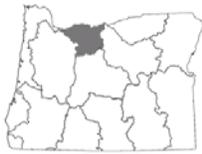
UPPER DESCHUTES AND CROOKED BASINS Reservoir Storage (1000 AF) - End of January					UPPER DESCHUTES AND CROOKED BASINS Watershed Snowpack Analysis - February 1, 2014			
Reservoir	Usable Capacity	*** This Year	Usable Storage Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	% of Median
Crane Prairie	55.3	39.3	48.9	37.7	Crooked	4	25	28
Crescent Lake	86.9	61.2	72.6	46.1	Little Deschutes	4	34	34
Ochoco	47.5	10.4	20.4	18.8	Deschutes above Wickiup	4	37	37
Prineville	153.0	79.9	86.6	86.8	Tumalo and Squaw Creeks	5	40	37
Wickiup	200.0	165.9	181.1	161.7				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

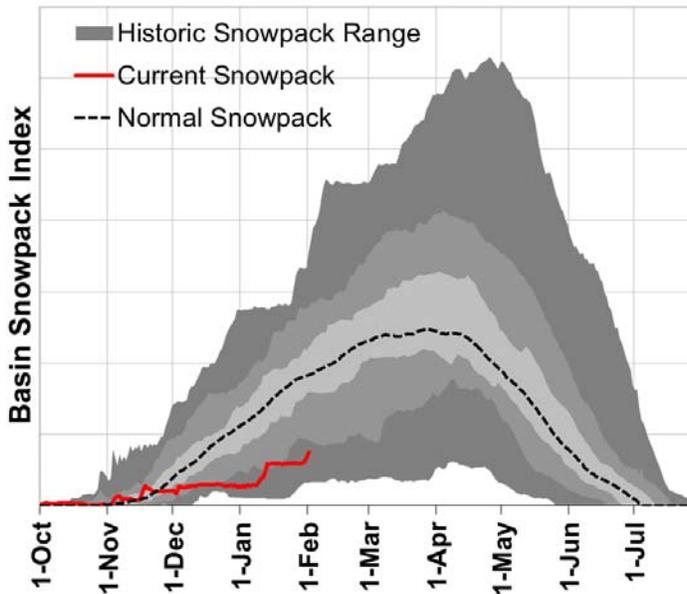
For more information contact your local Natural Resources Conservation Service office:  
 Redmond (541) 923-4358  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



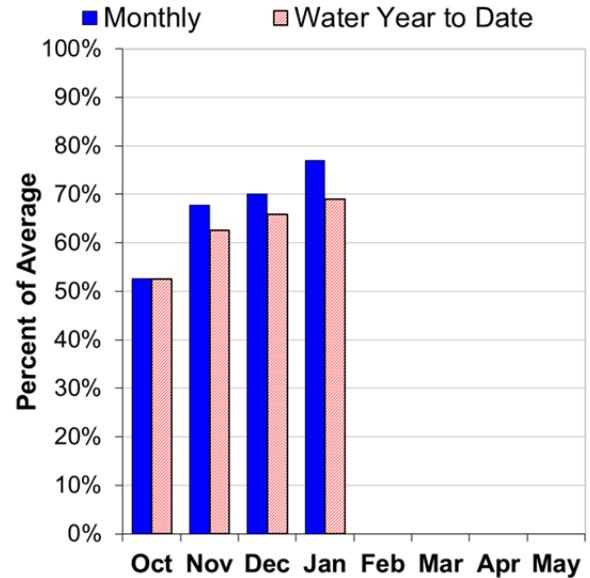
# Hood, Sandy, and Lower Deschutes Basins

February 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 39% of normal. This is significantly higher than last month when the snowpack was 22% of normal.

### PRECIPITATION

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

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 70% to 85% of average. Overall, forecasts decreased slightly from last month's report.

For more information contact your local Natural Resources Conservation Service office:  
The Dalles (541) 296-6178

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

HOOD, SANDY AND LOWER DESCHUTES BASINS  
Streamflow Forecasts - February 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)		
		90%		70%		50%			30%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)
WF Hood River nr Dee	APR-JUL	50	72	87	73	102	124	120		
Hood R at Tucker Bridge	APR-JUL	105	136	156	69	176	205	225		
	APR-SEP	131	164	186	70	210	240	265		
Sandy R nr Marmot	APR-JUL	189	230	260	84	290	330	310		
	APR-SEP	230	275	305	85	335	380	360		

HOOD, SANDY AND LOWER DESCHUTES BASINS  
Reservoir Storage (1000 AF) - End of January

HOOD, SANDY AND LOWER DESCHUTES BASINS  
Watershed Snowpack Analysis - February 1, 2014

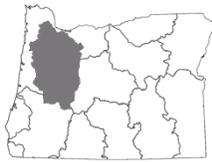
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Clear Lake	11.9	3.7	6.2	3.0	Hood River	4	48	45
					White River	6	40	34

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

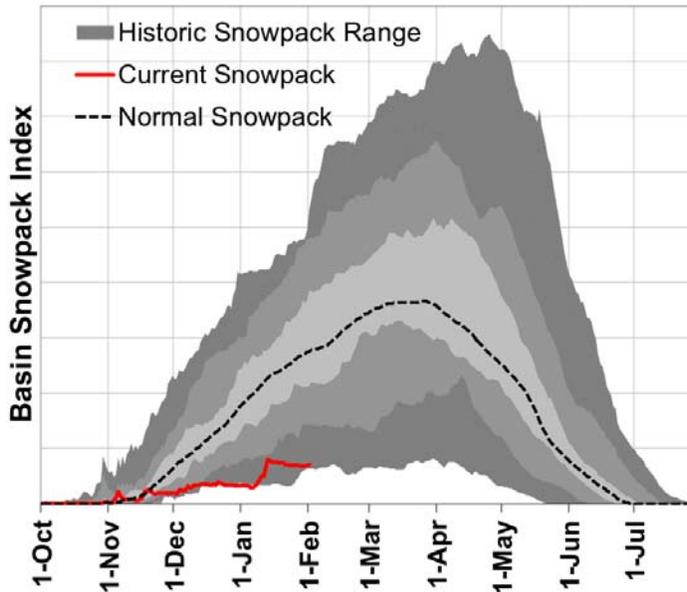
For more information contact your local Natural Resources Conservation Service office:  
The Dalles (541) 296-6178  
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



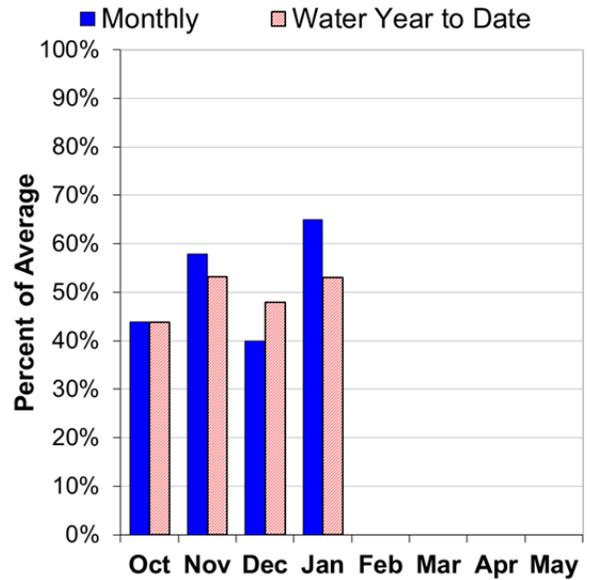
# Willamette Basin

February 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 26% of normal. This is significantly higher than last month when the snowpack was 18% of normal. Two SNOTEL sites in the basin have set new record lows for snowpack levels and several others are near record lows.

### PRECIPITATION

January precipitation was 65% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 53% of average.

### RESERVOIR

Reservoir storage across the basin is currently near average. As of February 1, storage at published reservoirs was 100% of average and 78% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 68% to 83% of average. Overall, forecasts decreased slightly from last month's report.

For more information contact your local Natural Resources Conservation Service office:  
 Eugene - (541) 465-6436; Portland - (503) 231-2270; Tangent - (541) 967-5925; Oregon City - (503) 656-3499;  
 Hillsboro - (503) 648-3174; McMinnville - (503) 472-1474  
 Salem - (503) 399-5746; Dallas - (503) 623-5534  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

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WILLAMETTE BASIN  
Streamflow Forecasts - February 1, 2014

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Forecast Point	Forecast Period	Future Conditions				Wetter		30-Yr Avg. (1000AF)
		<<==== Drier =====>>		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Oak Grove Fork Of Clackamas	APR-JUL	55	71	82	71	93	109	115
	APR-SEP	77	97	110	71	123	143	155
Clackamas R ab Three Lynx	APR-JUL	220	275	315	70	355	410	450
	APR-SEP	280	340	380	71	420	480	535
Clackamas R at Estacada	APR-JUL	305	390	445	71	500	585	625
	APR-SEP	380	465	525	72	585	670	730
Detroit Lake Inflow (1,2)	FEB-MAY	360	500	560	77	620	760	730
	APR-JUL	190	315	370	70	425	550	530
	APR-SEP	240	370	430	70	490	620	610
Little North Santiam R nr Mehama (1)	FEB-MAY	103	150	172	78	194	240	220
	APR-JUL	43	81	98	74	115	153	133
	APR-SEP	49	87	105	74	123	161	141
North Santiam R at Mehama (1,2)	FEB-MAY	475	710	820	75	930	1170	1090
	APR-JUL	290	445	515	70	585	740	740
	APR-SEP	365	525	595	71	665	825	840
Green Peter Lake Inflow (1,2)	FEB-MAY	225	355	415	86	475	605	480
	APR-JUL	95	188	230	82	270	365	280
	APR-SEP	109	205	245	83	285	380	295
Foster Lake Inflow (1,2)	FEB-MAY	390	605	700	77	795	1010	915
	APR-JUL	150	325	405	76	485	660	530
	APR-SEP	183	355	435	77	515	685	565
South Santiam R at Waterloo (2)	FEB-MAY	540	695	800	81	905	1060	990
	APR-JUL	235	360	445	80	530	655	555
	APR-SEP	255	375	460	78	545	665	590
McKenzie R bl Trail Bridge (2)	FEB-MAY	155	188	210	74	230	265	285
	APR-JUL	150	173	189	73	205	230	260
	APR-SEP	205	235	255	74	275	305	345

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For more information contact your local Natural Resources Conservation Service office:  
 Eugene - (541) 465-6436; Portland - (503) 231-2270; Tangent - (541) 967-5925; Oregon City - (503) 656-3499; Hillsboro - (503) 648-3174; McMinnville - (503) 472-1474  
 Salem - (503) 399-5746; Dallas - (503) 623-5534  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

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WILLAMETTE BASIN  
Streamflow Forecasts - February 1, 2014

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Forecast Point	Forecast Period	Future Conditions					30-Yr Avg. (1000AF)	
		<<==== Drier =====>>		Chance Of Exceeding *		==== Wetter =====>		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Cougar Lake Inflow (1,2)	FEB-MAY	125	187	215	77	245	305	280
	APR-JUL	93	136	155	76	174	215	205
	APR-SEP	113	156	176	75	196	240	235
Blue Lake Inflow (1,2)	FEB-MAY	47	90	110	71	130	173	156
	APR-JUL	24	50	62	74	74	100	84
	APR-SEP	29	54	66	77	78	103	86
McKenzie R nr Vida (1,2)	FEB-MAY	760	995	1100	87	1210	1440	1260
	APR-JUL	545	705	780	80	855	1020	970
	APR-SEP	720	900	980	82	1060	1240	1190
Hills Creek Reservoir Inflow (1,2)	FEB-MAY	114	220	265	70	310	415	380
	APR-JUL	78	149	181	66	215	285	275
	APR-SEP	105	181	215	68	250	325	315
MF Willamette R bl NF	FEB-MAY	410	650	760	80	870	1110	950
	APR-JUL	265	470	565	81	660	865	695
	APR-SEP	325	545	645	82	745	965	790
Lookout Point Lake Inflow (1,2)	FEB-MAY	330	590	710	71	830	1090	1000
	APR-JUL	210	400	485	67	570	760	725
	APR-SEP	270	480	575	70	670	880	825
Fall Creek Lake Inflow (1,2)	FEB-MAY	78	135	160	84	185	240	190
	APR-JUL	27	68	87	80	106	147	109
	APR-SEP	32	74	93	82	112	154	113
Cottage Grove Lake Inflow (1,2)	FEB-MAY	23	48	61	73	74	102	83
	APR-JUL	12.0	18.8	28	68	37	58	41
	APR-SEP	12.5	21	30	70	39	60	43
Dorena Lake Inflow (1,2)	FEB-MAY	60	143	180	73	215	300	245
	APR-JUL	11.6	69	95	70	121	178	136
	APR-SEP	15.4	73	99	71	125	183	139
Scoggins Ck nr Gaston (2)	FEB-JUL	6.9	17.7	25	63	32	43	40
Willamette R at Salem (1,2)	FEB-MAY	2470	4730	5750	77	6770	9030	7490
	APR-JUL	1330	2690	3300	77	3910	5270	4310
	APR-SEP	1640	3020	3640	77	4260	5640	4730

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For more information contact your local Natural Resources Conservation Service office:  
Eugene - (541) 465-6436; Portland - (503) 231-2270; Tangent - (541) 967-5925; Oregon City - (503) 656-3499; Hillsboro - (503) 648-3174; McMinnville - (503) 472-1474  
Salem - (503) 399-5746; Dallas - (503) 623-5534  
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

WILLAMETTE BASIN Reservoir Storage (1000 AF) - End of January					WILLAMETTE BASIN Watershed Snowpack Analysis - February 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage This Year	Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	% of Median
Blue River	85.5	17.7	6.8	9.5	Clackamas	6	18	16
Cottage Grove	29.8	7.3	4.8	4.9	McKenzie	7	28	30
Cougar	155.2	37.6	50.9	55.3	Row River	1	3	3
Detroit	300.7	205.4	153.2	180.5	Santiam	6	11	15
Dorena	70.5	23.9	12.2	11.7	Middle Fork Willamette	6	31	33
Fall Creek	115.5	7.4	19.3	16.5				
Fern Ridge	109.6	11.7	5.1	16.0				
Foster	29.7	27.7	25.4	22.8				
Green Peter	268.2	221.5	192.7	182.9				
Hills Creek	200.2	106.5	112.3	105.8				
Lookout Point	337.0	146.6	166.1	143.9				
Timothy Lake	61.7	52.9	48.5	51.0				
Henry Hagg Lake	53.0	36.0	35.9	38.0				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

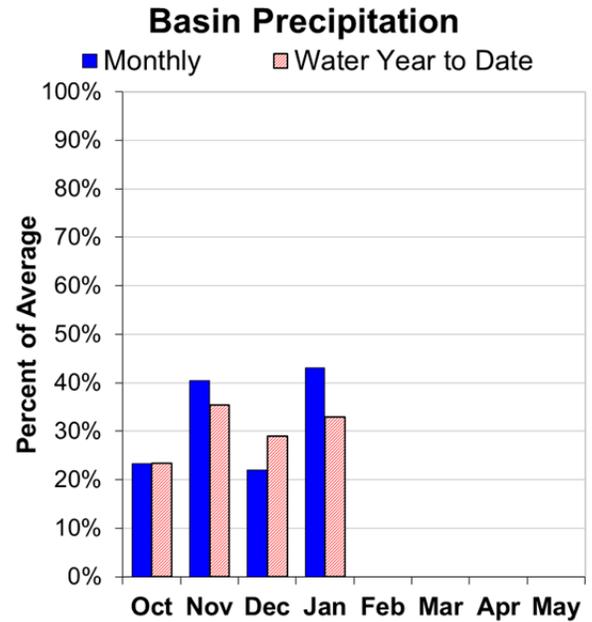
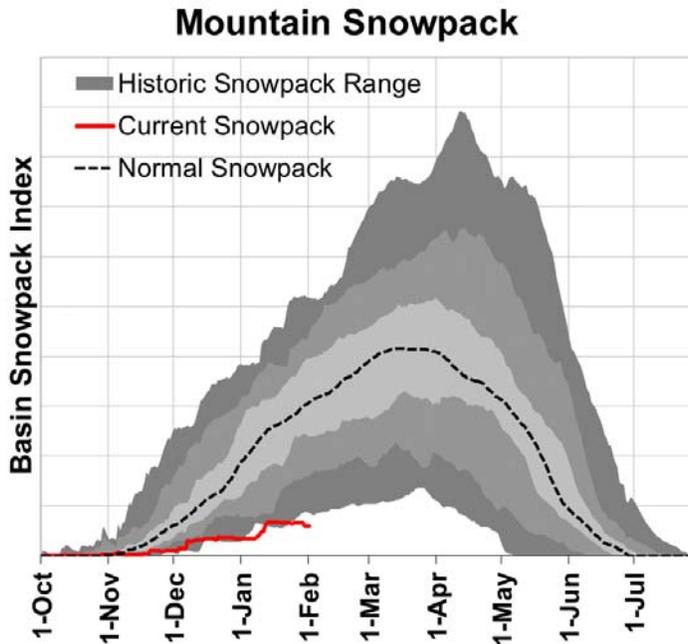
Eugene - (541) 465-6436; Portland - (503) 231-2270; Tangent - (541) 967-5925; Oregon City - (503) 656-3499; Hillsboro - (503) 648-3174; McMinnville - (503) 472-1474  
Salem - (503) 399-5746; Dallas - (503) 623-5534

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



# Rogue and Umpqua Basins

February 1, 2014



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 18% of normal—the lowest in the state (along with Lake County & Goose Lake Basin). Snowpack conditions have changed little from last month when the snowpack was 19% of normal. Eight long-term snowpack monitoring sites in the basin have set new record low levels for snow water equivalent, including three snow courses on Mt. Ashland that have been measured continuously for over 40 years.

### PRECIPITATION

January precipitation was 43% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 33% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 75% of average and 43% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 39% to 68% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:

Roseburg - (541) 673-8316; Medford - (541) 776-4267

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

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ROGUE AND UMPQUA BASINS  
Streamflow Forecasts - February 1, 2014

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Forecast Point	Forecast Period	Future Conditions				Wetter		30-Yr Avg. (1000AF)
		<<===== Drier =====>>		Chance Of Exceeding *		===== >>>		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Cow Ck nr Azalea (2)	FEB-JUL	5.8	13.3	22	61	33	49	36
	APR-JUL	2.5	5.1	8.8	60	13.3	19.9	14.7
	APR-SEP	2.5	5.7	9.1	57	13.8	21	15.9
North Umpqua R at Winchester	APR-JUL	265	415	515	66	615	765	775
	APR-SEP	340	500	605	68	710	870	890
South Umpqua R at Tiller	APR-JUL	35	86	121	63	156	205	193
	APR-SEP	42	94	129	65	164	215	200
South Umpqua R nr Brockway	APR-JUL	40	162	245	63	330	450	390
	APR-SEP	45	170	255	62	340	465	410
Hyatt Reservoir Inflow	APR-JUL	0.108	0.54	1.01	28	1.64	2.8	3.6
Lost Creek Lake Inflow (2)	FEB-JUL	290	400	475	60	550	660	795
	FEB-SEP	365	485	570	62	655	775	920
	APR-JUL	187	260	310	60	360	435	520
	APR-SEP	255	340	400	62	460	545	645
Rogue R at Raygold (2)	APR-JUL	100	245	345	51	445	590	675
	APR-SEP	174	330	435	54	540	695	805
Rogue R at Grants Pass (2)	APR-JUL	78	245	355	49	465	630	725
	APR-SEP	128	310	430	51	550	730	845
Applegate Lake Inflow (2)	FEB-JUL	22	48	71	36	99	148	195
	FEB-SEP	20	48	76	38	118	180	200
	APR-JUL	11.8	27	40	37	56	85	109
	APR-SEP	11.5	29	45	39	66	97	115
Sucker Ck bl Ltl Grayback Ck nr Holl	APR-JUL	4.9	12.6	20	36	29	45	55
	APR-SEP	6.5	15.1	23	39	33	50	59
Illinois R at Kerby	APR-JUL	24	53	80	43	113	169	188
	APR-SEP	25	54	81	42	116	174	193

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For more information contact your local Natural Resources Conservation Service office:  
Roseburg - (541) 673-8316; Medford - (541) 776-4267  
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

ROGUE AND UMPQUA BASINS Reservoir Storage (1000 AF) - End of January					ROGUE AND UMPQUA BASINS Watershed Snowpack Analysis - February 1, 2014			
Reservoir	Usable Capacity	*** This Year	Usable Storage Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	as % of Median
Applegate	75.2	-0.8	15.1	10.8	Applegate	4	3	3
Emigrant Lake	39.0	10.8	23.4	21.6	Bear Creek	4	3	3
Fish Lake	8.0	3.7	5.0	4.8	Little Butte Creek	5	23	21
Fourmile Lake	16.1	3.1	8.2	6.9	Illinois	1	0	0
Howard Prairie	60.0	32.8	38.1	36.1	North Umpqua	6	17	20
Hyatt Prairie	16.1	9.4	12.6	10.2	Rogue River above Grant	17	14	16
Lost Creek	315.0	143.5	174.7	161.8				

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

Roseburg - (541) 673-8316; Medford - (541) 776-4267

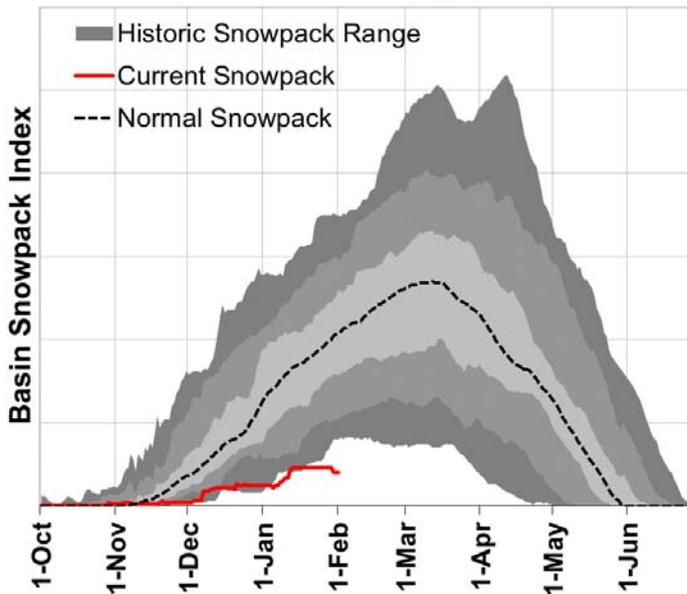
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



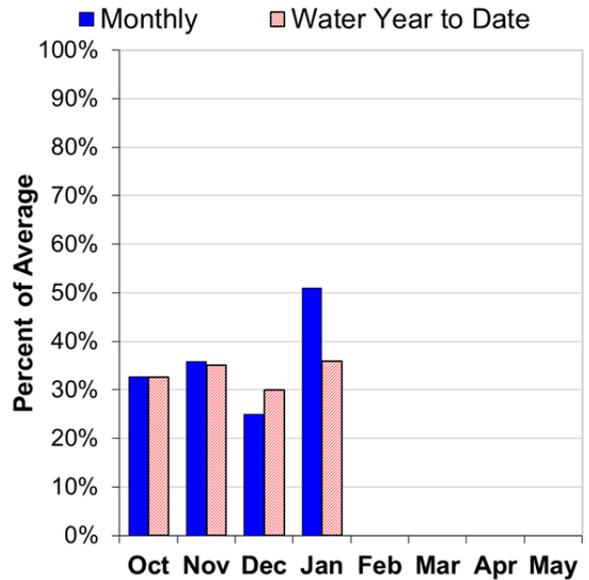
# Klamath Basin

February 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 20% of normal. Snowpack in the basin has changed little from last month when the snowpack was 19% of normal. Sites in the southeastern part of the basin are snow-free below 5000 feet. Six long-term snowpack monitoring sites in the basin have set new record low levels for snow water equivalent and several other sites are second lowest on record since 1977. Since the NRCS began measuring Park Headquarters Revised snow course (near Crater Lake) in 1945, there has only been one year with a lower February 1 measurement (1977).

### PRECIPITATION

January precipitation was 51% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 36% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 56% of average and 29% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 2% to 37% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for significantly limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:

Klamath Falls - (541) 883-6932

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

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KLAMATH BASIN  
Streamflow Forecasts - February 1, 2014

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		50% (1000AF) (% AVG.)			30% (1000AF)		10% (1000AF)	
		Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *			Chance Of Exceeding *		Chance Of Exceeding *	
Clear Lk Inflow (2)	FEB-JUL	0.090	1.86	7.0	8	32	70	93				
	APR-SEP	0.040	0.70	1.70	5	11.5	26	35				
Gerber Res Inflow (2)	FEB-JUL	0.040	0.82	1.80	4	13.0	29	41				
	APR-SEP	0.014	0.144	0.29	2	6.5	15.8	14.4				
Sprague R nr Chiloquin	FEB-JUL	3.0	11.7	62	21	112	186	295				
	FEB-SEP	3.2	22	75	23	128	205	320				
	APR-SEP	2.1	7.6	42	20	76	127	210				
Williamson R bl Sprague R nr Chiloquin	FEB-JUL	22	113	175	37	237	328	475				
	FEB-SEP	44	140	205	39	270	366	530				
	APR-SEP	26	88	130	37	172	234	355				
Upper Klamath Lk Inflow (1)	FEB-JUL	21	176	265	37	354	551	715				
	FEB-SEP	15.9	193	290	36	387	602	795				
	MAR-SEP	19.6	126	205	31	284	459	655				
	APR-SEP	9.5	96	150	32	204	324	475				

KLAMATH BASIN Reservoir Storage (1000 AF) - End of January					KLAMATH BASIN Watershed Snowpack Analysis - February 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Clear Lake	527.0	46.5	82.9	199.0	Lost	3	0	0
Gerber	94.3	10.2	34.2	43.5	Sprague	5	19	19
Upper Klamath Lake	523.7	273.6	285.4	338.7	Upper Klamath Lake	7	27	24
					Williamson River	5	23	22

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

Klamath Falls - (541) 883-6932

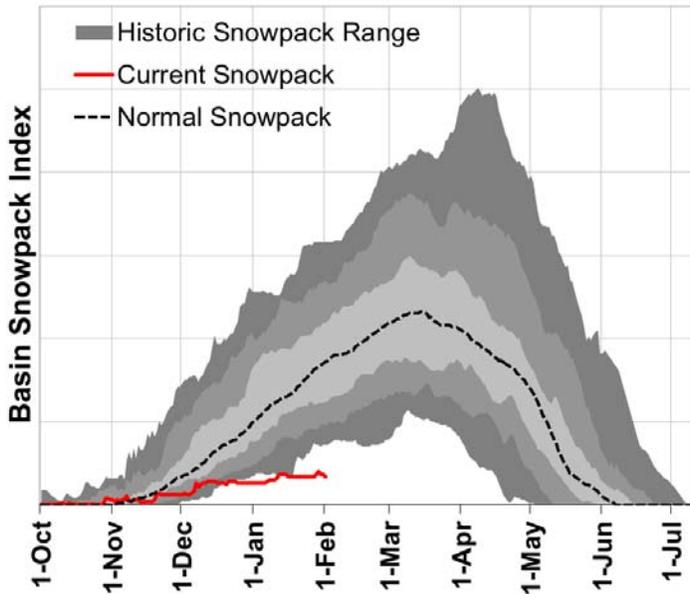
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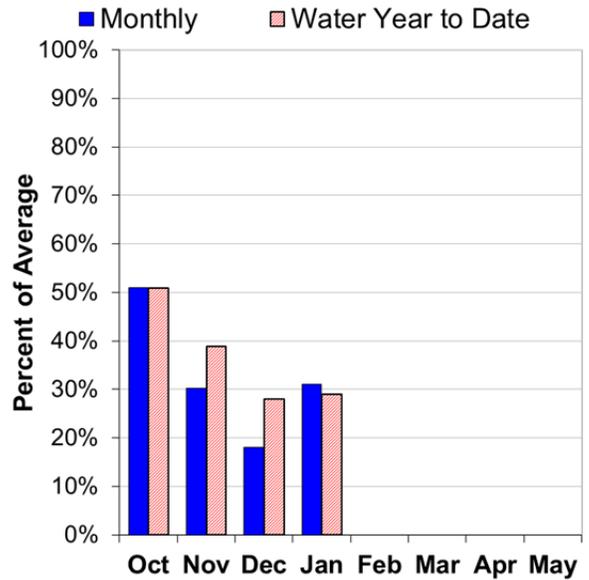
# Lake County and Goose Lake

February 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 18% of normal. This is slightly lower than last month when the snowpack was 25% of normal. Four long-term snowpack monitoring sites in the basin have set new record low levels for snow water equivalent. Sites below 6000 feet are mostly snow-free. This area is tied with the Rogue and Umpqua for the lowest snowpack in the state.

### PRECIPITATION

January precipitation was 31% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 29% of average. Both January and water year precipitation totals are the lowest in the state.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of February 1, storage at published reservoirs was 35% of average and 16% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 20% to 29% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for significantly limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:  
Lakeview - (541) 947-2202

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

LAKE COUNTY AND GOOSE LAKE BASINS  
Streamflow Forecasts - February 1, 2014

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)	
Twentymile Ck nr Adel	MAR-JUL	0.54	3.8	6.5	24	10.3	18.9	27
	APR-SEP	0.40	2.2	4.0	23	6.5	12.0	17.4
Deep Ck ab Adel	MAR-JUL	5.5	11.1	21	27	34	53	79
	APR-SEP	5.0	10.0	17.0	26	28	44	65
Honey Ck nr Plush	MAR-JUL	0.34	2.4	3.4	20	6.5	13.0	17.1
	APR-SEP	0.20	1.30	2.8	20	5.0	10.0	14.1
Chewaucan R nr Paisley	MAR-JUL	10.1	17.6	25	30	37	55	84
	APR-SEP	8.2	15.0	22	29	33	48	75

LAKE COUNTY AND GOOSE LAKE BASINS  
Reservoir Storage (1000 AF) - End of January

LAKE COUNTY AND GOOSE LAKE BASINS  
Watershed Snowpack Analysis - February 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Cottonwood	8.7	0.2	4.2	3.9	Chewaucan River	3	19	20
Drews	63.0	11.0	32.5	28.4	Deep Creek	3	20	17
					Drew Creek	4	10	9
					Honey Creek	2	4	2
					Silver Creek (Lake Co.)	4	21	19
					Twentymile Creek	3	20	17

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:

Lakeview - (541) 947-2202

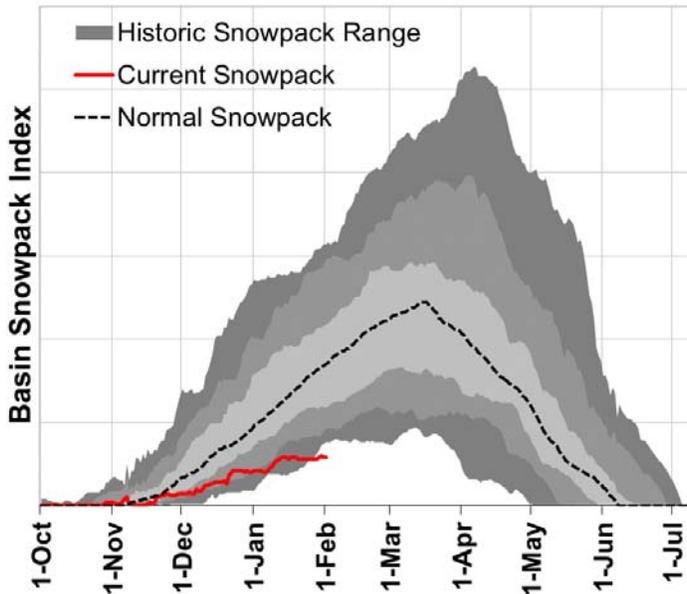
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



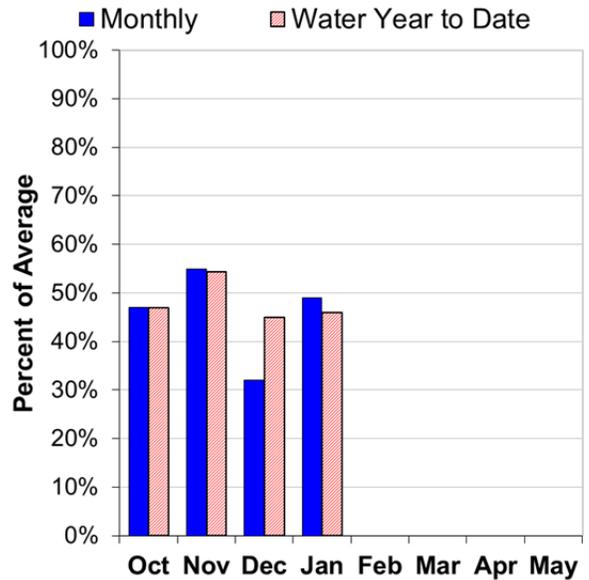
# Harney Basin

February 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of February 1, the basin snowpack was 34% of normal. This is significantly lower than last month when the snowpack was 44% of normal. Three long-term snowpack monitoring sites in the basin have set new record low levels for snow water equivalent, including Fish Creek and Silvies SNOTEL sites (previous record was 1991).

### PRECIPITATION

January precipitation was 49% of average. Precipitation since the beginning of the water year (October 1 - February 1) has been 46% of average.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 12% to 49% of average. Overall, forecasts decreased significantly from last month's report. Water users in the basin should prepare for significantly limited water supplies this summer.

For more information contact your local Natural Resources Conservation Service office:

Hines - (541) 573-6446

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

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HARNEY BASIN  
Streamflow Forecasts - February 1, 2014

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Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)		
		90%		70%		50%			30%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)
Silvies R nr Burns	MAR-JUL	1.00	8.0	16.0	13	44	80	123		
	APR-SEP	0.000	4.6	11.0	12	23	46	92		
Donner Und Blitzen R nr Frenchglen	MAR-JUL	2.3	21	33	46	45	64	72		
	APR-SEP	2.4	21	33	49	45	64	68		
Trout Ck nr Denio	MAR-JUL	0.000	0.87	2.0	23	4.2	7.4	8.7		
	APR-SEP	0.000	0.70	1.65	21	3.9	7.2	8.0		

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HARNEY BASIN  
Reservoir Storage (1000 AF) - End of January

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Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

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HARNEY BASIN  
Watershed Snowpack Analysis - February 1, 2014

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Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
Donner und Blitzen Rive	3	23	28
Silver Creek (Harney Co	2	36	34
Silvies River	5	49	39
Trout Creek	4	22	26

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\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
 (2) - The value is natural volume - actual volume may be affected by upstream water management.

For more information contact your local Natural Resources Conservation Service office:  
 Hines - (541) 573-6446  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

# 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	**Peak CFS	Less Than	This Flow	<b>May 6</b>
Owyhee R nr Rome	1000 cfs	Feb 18	Mar 30	May 9	<b>May 18</b>
Owyhee R nr Rome	500 cfs	Feb 25	Apr 7	May 18	<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	10.8	150	350	<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	May 9	May 25	Jun 10	<b>May 25</b>
Crane Prairie Inflow	Peak Flow	33	185	335	<b>403</b>
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	30	103	176	<b>269</b>
Prineville Reservoir Inflow	113 cfs	Apr 6	May 1	May 26	<b>June 3</b>
Prineville Reservoir Inflow	75 cfs	Apr 12	May 7	Jun 1	<b>June 11</b>
Prineville Reservoir Inflow	50 cfs	Apr 20	May 16	Jun 11	<b>June 19</b>
Whychus Creek nr Sisters	100 cfs	Jun 16	Jul 13	Aug 7	<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	Jul 1	Jul 18	Aug 7	<b>August 8</b>
South Umpqua R at Tiller	140 cfs	Jun 4	Jun 26	Jul 18	<b>July 11</b>
South Umpqua R at Tiller	90 cfs	Jun 23	Jul 16	Aug 7	<b>August 1</b>
South Umpqua R at Tiller	60 cfs	Jul 17	Aug 17	Sep 16	<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	Apr 28	May 18	Jun 7	<b>June 17</b>
Honey Ck nr Plush	100 cfs	Mar 11	Apr 15	May 20	<b>May 16</b>
Honey Ck nr Plush	50 cfs	Mar 25	Apr 26	May 28	<b>June 4</b>
Twentymile Ck nr Adel	50 cfs	Mar 9	Apr 8	May 8	<b>May 30</b>
Twentymile Ck nr Adel	10 cfs	May 13	Jun 5	Jun 28	<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	**Peak CFS	Less Than	This Flow	<b>May 21</b>
Silvies R nr Burns	200 cfs	Mar 26	Apr 22	May 20	<b>June 2</b>
Silvies R nr Burns	100 cfs	Mar 31	Apr 29	May 28	<b>June 13</b>
Silvies R nr Burns	50 cfs	Apr 17	May 22	May 20	<b>July 3</b>
Donner Und Blitzen R nr Frenchglen	200 cfs	May 4	May 26	Jun 17	<b>June 20</b>
Donner Und Blitzen R nr Frenchglen	100 cfs	May 25	Jun 14	Ju1 4	<b>July 9</b>

# Summary of Snowpack Data

## February 2014

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon</b>						
ANEROID LAKE SNOTEL	7400	2/01/14	46	14.1	15.1	14.4
ANNIE SPRING SNOTEL	6010	2/01/14	18	5.4	24.2	26.8
ANTHONY LAKE (REV)	7130	1/31/14	54	12.8	17.0	--
ARBUCKLE MTN SNOTEL	5770	2/01/14	26	7.3	13.5	12.2
BALD PETER	5400	1/31/14	15	5.4	19.2	19.7
BARNEY CREEK (NEW)	5840	1/30/14	9	2.0	5.2	--
BEAR FLAT MEADOW AM	5900	1/28/14	0	.0	6.0	7.4
BEAR GRASS SNOTEL	4720	2/01/14	27	9.9	37.4	--
BEAVER CREEK #1	4250	1/30/14	5	1.2	8.0	--
BEAVER CREEK #2	4250	1/30/14	1	.2	5.4	8.0
BEAVER DAM CREEK	5100	2/03/14	4	1.1	12.5	10.2
BEAVER RES. SNOTEL	5150	2/01/14	22	6.7	7.2	6.6
BIG RED MTN SNOTEL	6050	2/01/14	2	1.0	18.2	17.6
BIG SHEEP AM	6200	2/01/14	28	8.1	15.9	17.2
BIGELOW CAMP SNOTEL	5130	2/01/14	0	.0	12.9	8.9
BILLIE CK DVD SNOTEL	5280	2/01/14	13	4.2	12.8	16.7
BLAZED ALDER SNOTEL	3650	2/01/14	28	8.7	23.9	21.4
BLUE MTN SPGS SNOTEL	5870	2/01/14	18	6.2	8.1	11.2
BOULDER CREEK AM	5690	1/28/14	0	.0	--	2.9
BOURNE SNOTEL	5850	2/01/14	25	6.7	9.3	11.1
BOWMAN SPRNGS SNOTEL	4530	2/01/14	20	6.1	5.7	6.2
BUCK PASTURE AM	5700	1/28/14	0	.0	4.0	2.3
BULLY CREEK AM	5300	1/28/14	0	.0	1.8	2.9
CALIBAN ALT	6500	2/03/14	2	.6	22.6	20.2
CALL MEADOWS AM	5340	1/28/14	0	.0	1.8	3.6
CAMAS CREEK #3	5850	1/30/14	2	.4	5.6	8.8
CASCADE SUM. SNOTEL	5100	2/01/14	28	8.9	23.3	20.4
CHEMULT ALT SNOTEL	4850	2/01/14	2	1.2	5.4	7.6
CLACKAMAS LK. SNOTEL	3400	2/01/14	4	1.3	8.1	9.2
CLEAR LAKE SNOTEL	3810	2/01/14	5	1.1	7.5	9.7
COLD SPRINGS SNOTEL	5940	2/01/14	14	3.7	17.2	22.5
COUNTY LINE SNOTEL	4830	2/01/14	6	3.0	4.0	3.9
COX FLAT AM	5750	1/28/14	0	.0	4.5	5.4
CRAZYMAN FLAT SNOTEL	6180	2/01/14	2	1.1	10.5	10.9
DALY LAKE SNOTEL	3690	2/01/14	1	.3	11.9	10.0
DERR	5670	1/28/14	6	1.8	9.4	7.9
DERR SNOTEL	5850	2/01/14	9	2.7	11.4	9.8
DIAMOND LAKE SNOTEL	5280	2/01/14	3	1.5	11.8	12.2
DOOLEY MOUNTAIN	5430	1/30/14	11	1.2	5.8	6.6
EILERTSON SNOTEL	5510	2/01/14	12	4.0	5.7	7.9
ELDORADO PASS	4600	1/30/14	0	.0	3.0	2.8
EMIGRANT SPGS SNOTEL	3800	2/01/14	12	4.1	5.3	5.4
FISH CREEK SNOTEL	7660	2/01/14	20	5.6	23.8	15.8
FISH LK. SNOTEL	4660	2/01/14	5	3.0	10.4	9.1
FLAG PRAIRIE AM	4750	1/28/14	0	.0	2.5	4.8
FOURMILE LAKE SNOTEL	5970	2/01/14	11	4.6	13.1	21.2
GERBER RES SNOTEL	4890	2/01/14	0	.0	2.1	1.5
GOLD CENTER SNOTEL	5410	2/01/14	19	5.0	8.0	7.3
GOVT CORRALS AM	7450	2/01/14	10	2.7	8.5	--
GREENPOINT SNOTEL	3310	2/01/14	2	1.2	10.1	13.2
HART MOUNTAIN AM	6350	2/01/14	0	.0	2.3	1.4
HIGH RIDGE SNOTEL	4920	2/01/14	39	11.0	14.6	16.1
HOGG PASS SNOTEL	4790	2/01/14	16	5.1	19.2	13.9
HOLLAND MDWS SNOTEL	4930	2/01/14	1	.5	17.1	16.0
HOWARD PRAIRIE	4500	2/03/14	1	.2	7.2	5.9
HUNGRY FLAT	4400	1/31/14	0	.0	2.0	2.3
IRISH-TAYLOR SNOTEL	5540	2/01/14	35	11.1	21.2	22.7
JUMP OFF JOE SNOTEL	3520	2/01/14	0	.0	12.1	9.1
KING MTN #1	4500	1/31/14	0	.0	15.2	3.8

SNOW COURSE		ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon (Continued)</b>							
KING MTN #2	SNOTEL	4340	2/01/14	0	.0	14.1	2.5
KING MTN #3		3650	1/31/14	0	.0	5.7	.0
KING MTN #4		3050	1/31/14	0	.0	.0	.0
LAKE CK R.S.	SNOTEL	5240	2/01/14	9	3.3	5.3	9.4
LITTLE ALPS		6200	1/31/14	23	5.8	8.4	7.8
LITTLE ANTONE (ALT)		5000	1/31/14	15	3.0	5.9	6.8
LITTLE MEADOW	SNOTEL	4020	2/01/14	10	3.9	23.6	16.6
LOUSE CANYON	AM	6440	1/28/14	0	.0	7.3	4.2
LUCKY STRIKE	SNOTEL	4970	2/01/14	13	4.3	5.7	5.9
MADISON BUTTE	SNOTEL	5150	2/01/14	9	2.1	7.2	3.8
MARION FORKS	SNOTEL	2590	2/01/14	0	.0	10.4	6.3
MARKS CREEK		4540	1/28/14	0	.0	4.7	3.4
MARY'S PEAK REV		3620	1/29/14	0	.0	15.0	1.2
MCKENZIE	SNOTEL	4770	2/01/14	31	11.4	27.4	29.8
MILKSHAKES	SNOTEL	5580	2/01/14	65	19.1	26.1	--
MILLER WOODS	SNOTEL	420	2/01/14	0	.0	.0	--
MOSS SPRINGS	SNOTEL	5760	2/01/14	58	16.0	13.3	16.2
MT ASHLAND SWBK.		6400	2/03/14	2	.3	22.3	21.2
MT HOOD TEST	SNOTEL	5370	2/01/14	67	22.0	33.8	38.4
MT HOWARD	SNOTEL	7910	2/01/14	42	13.7	10.9	10.2
MUD RIDGE	SNOTEL	4070	2/01/14	21	6.3	17.6	18.5
NEW CRESCENT	SNOTEL	4910	2/01/14	9	2.6	9.0	10.7
NEW DUTCHMAN #3		6320	1/31/14	51	16.5	31.8	31.9
NORTH FK RES	SNOTEL	3060	2/01/14	13	4.5	21.1	13.2
OCHOCO MEADOWS		5200	1/28/14	9	2.4	6.5	8.5
OCHOCO MEADOW	SNOTEL	5430	2/01/14	7	3.0	7.2	7.4
PARK H.Q. REV		6550	1/30/14	36	11.1	39.6	36.9
PATTON MEADOWS	AM	6800	2/01/14	5	1.8	8.5	10.2
PEAVINE RIDGE	SNOTEL	3420	2/01/14	2	.4	11.5	10.3
PUEBLO SUMMIT	AM	6800	1/28/14	0	.0	4.5	1.8
QUARTZ MTN	SNOTEL	5720	2/01/14	0	.0	2.6	1.5
RACING CREEK		4800	1/31/14	3	.8	11.6	10.5
R.R. OVERPASS	SNOTEL	2680	2/01/14	0	.0	1.5	.0
RED BUTTE #1		4560	1/30/14	1	.1	12.7	7.4
RED BUTTE #2		4000	1/30/14	0	.0	1.2	2.3
RED BUTTE #3		3500	1/30/14	0	.0	3.5	.4
RED BUTTE #4		3000	1/30/14	0	.0	.3	.0
RED HILL	SNOTEL	4410	2/01/14	38	14.5	28.3	30.9
ROARING RIVER	SNOTEL	4950	2/01/14	17	6.2	20.2	18.6
ROCK SPRINGS	SNOTEL	5290	2/01/14	4	.8	4.6	4.7
ROGGER MEADOWS	AM	6500	2/01/14	2	.7	6.3	7.7
SADDLE MTN	SNOTEL	3110	2/01/14	1	.2	10.5	--
SALT CK FALLS	SNOTEL	4220	2/01/14	10	2.6	14.5	13.9
SANTIAM JCT.	SNOTEL	3740	2/01/14	2	1.0	15.5	13.5
SCHNEIDER MDW	SNOTEL	5400	2/01/14	36	8.9	14.3	19.6
SEINE CREEK	SNOTEL	2060	2/01/14	0	.0	.0	.2
SEVENMILE MARSH SNTL		5700	2/01/14	14	4.2	14.8	20.0
SHERMAN VALLEY	AM	6600	2/01/14	0	.0	4.2	8.0
SILVER BURN		3720	1/30/14	4	2.2	9.6	8.2
SILVER CREEK	SNOTEL	5740	2/01/14	4	1.9	6.1	8.1
SILVIES	SNOTEL	6990	2/01/14	11	2.9	8.2	9.6
SISKIYOU SUMMIT REV		4630	2/03/14	0	.0	8.0	5.0
SKI BOWL ROAD		6000	2/03/14	2	.3	14.3	15.0
SMITH RIDGE	SNOTEL	3330	2/01/14	0	.0	11.9	--
SNOW MTN	SNOTEL	6220	2/01/14	7	1.9	6.7	6.3
SF BULL RUN	SNOTEL	2690	2/01/14	5	1.5	13.0	1.3
STARR RIDGE	SNOTEL	5250	2/01/14	8	2.1	4.4	5.3
STRAWBERRY	SNOTEL	5770	2/01/14	0	.0	3.8	4.4
SUMMER RIM	SNOTEL	7080	2/01/14	12	3.7	11.7	11.1
SUMMIT LAKE	SNOTEL	5610	2/01/14	26	8.4	25.1	23.7
SUN PASS	SNOTEL	5400	2/01/14	6	2.9	9.5	--
SWAN LAKE MTN	SNOTEL	6830	2/01/14	7	3.4	13.7	--
TANGENT		5400	1/31/14	10	2.6	14.6	14.5
TAYLOR BUTTE	SNOTEL	5030	2/01/14	1	.2	4.6	5.5
TAYLOR GREEN	SNOTEL	5740	2/01/14	43	11.0	11.6	14.5

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon (Continued)</b>						
THREE CK MEAD SNOTEL	5690	2/01/14	12	3.5	10.0	12.4
TIPTON SNOTEL	5150	2/01/14	15	3.1	6.8	8.5
TOKETEE AIRSTRIP SN	3240	2/01/14	0	.0	5.6	3.4
TROUT CREEK AM	7800	2/01/14	11	3.0	8.0	8.2
V LAKE AM	6600	2/01/14	0	.0	5.0	5.2
WOLF CREEK SNOTEL	5630	2/01/14	26	7.8	7.9	11.6
<b>California</b>						
ADIN MOUNTAIN	6350	1/30/14	1	.1	7.4	8.8
ADIN MTN SNOTEL	6190	2/01/14	0	.0	7.5	8.6
BLUE LAKE RANCH	6800	1/29/14	0	.0	8.0	6.3
CEDAR PASS	7100	1/29/14	5	1.2	9.6	10.2
CEDAR PASS SNOTEL	7030	2/01/14	6	2.5	9.8	11.3
CROWDER FLAT SNOTEL	5170	2/01/14	0	.0	3.9	3.7
DISMAL SWAMP SNOTEL	7360	2/01/14	13	4.8	17.5	18.0
STATE LINE AM	5750	1/28/14	0	.0	1.8	3.8
<b>Idaho</b>						
BULL BASIN AM	5460	1/28/14	0	.0	1.9	2.1
MUD FLAT SNOTEL	5730	2/01/14	5	1.3	3.8	5.1
SOUTH MTN SNOTEL	6500	2/01/14	9	3.3	8.1	11.5
VAUGHT RANCH AM	5830	1/28/14	0	.0	--	4.0
<b>Nevada</b>						
BALD MOUNTAIN AM	6720	1/28/14	0	.0	--	2.7
BEAR CREEK SNOTEL	7800	2/01/14	22	5.7	11.6	11.5
BIG BEND SNOTEL	6700	2/01/14	8	2.7	5.2	5.5
BUCKSKIN,L SNOTEL	6700	2/01/14	15	3.4	7.0	6.5
COLUMBIA BASIN AM	6650	2/01/14	1	.2	4.9	7.8
DISASTER PEAK SNOTEL	6500	2/01/14	2	.5	4.7	5.6
FAWN CREEK SNOTEL	7050	2/01/14	21	4.6	9.4	10.2
FRY CANYON	6700	1/28/14	10	2.4	5.1	6.2
GOLD CREEK	6600	1/28/14	7	1.5	5.0	4.2
GRANITE PEAK SNOTEL	7800	2/01/14	23	4.1	12.6	12.1
JACK CREEK, U SNOTEL	7280	2/01/14	25	6.1	8.4	9.4
LAMANCE CREEK SNOTEL	6000	2/01/14	4	.6	5.0	8.0
LAUREL DRAW SNOTEL	6700	2/01/14	9	2.8	5.7	7.7
LITTLE BALLY MTN. AM	6000	1/28/14	0	.0	--	2.4
MERRIT MOUNTAIN AM	7000	2/01/14	2	.4	3.2	4.7
MIDAS (d)	7200	2/01/14	1	.2	1.7	2.4
QUINN RIDGE AM	6300	1/28/14	0	.0	3.4	2.0
SEVENTYSIX CK SNOTEL	7100	2/01/14	12	2.3	5.3	7.0
STAG MOUNTAIN AM	7700	2/01/14	0	.0	2.0	3.8
TAYLOR CANYON SNOTEL	6200	2/01/14	4	1.2	3.9	4.0
TREMEWAN RANCH	5700	1/28/14	0	.0	1.8	2.3

# 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) 414-3270**

**Web site: <http://www.or.nrcs.usda.gov/snow/index.html>**

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)	
Strawberry Ck nr Prairie City	MAR-JUL	5.0	6.6	7.6	89	8.5
	APR-SEP	5.2	6.8	7.9	90	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.2	5.4	6.9	99	7.0
	APR-SEP	1.7	3.3	4.4	90	4.9

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

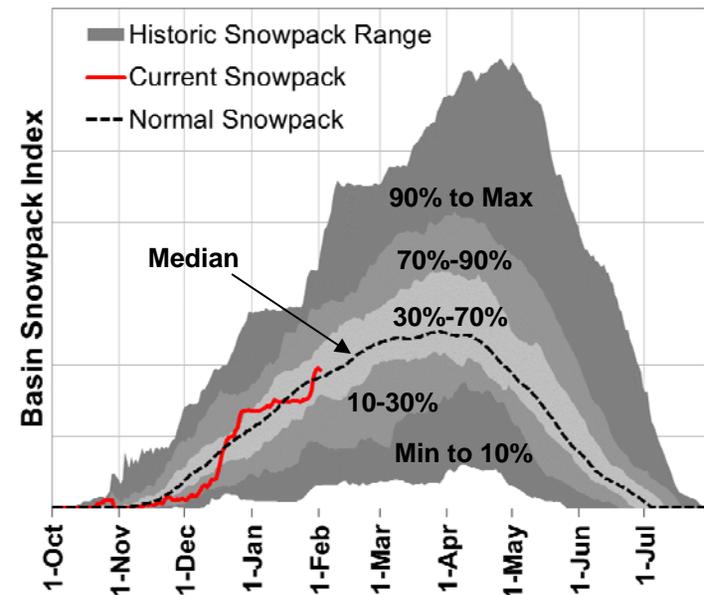
## Interpreting Snowpack Plots

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



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Official Business



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

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