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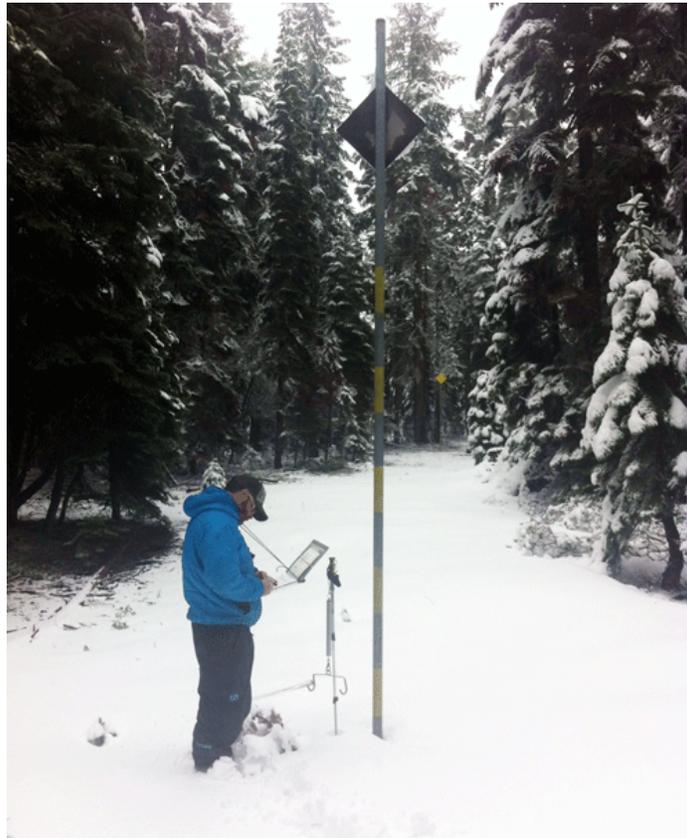


Natural Resources  
Conservation  
Service

# Oregon Basin Outlook Report

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## March 1, 2014



**NRCS Snow Surveyors Measure Record Low Snowpack**

*Photo courtesy of Christopher Garvey*

Peter Winnick (NRCS Oregon) is pictured above measuring record low March 1 snowpack levels at the Mt. Ashland Switchback snow course, which has been measured continuously since 1966. The latest measurement at this course replaces the previous record low set in 1977. With only a foot of snow on the snow course, the snowpack at this location in the Rogue River basin is 10% of normal. Several other SNOTEL and snow courses in southern Oregon have also set new record lows for March 1 snowpack. The implication of the meager snowpack is already being realized in the recreation industry, as Mt. Ashland ski area has yet to open this winter. The lasting effects of the current low snowpack conditions will be observed later, as streams and rivers across southern and eastern Oregon are expected to experience well below average summer streamflows.

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# General Outlook

March 1, 2014

## SUMMARY

Winter finally arrived in Oregon during February, putting an end to the dry spell that had lasted for four long months. Early in the month, cold temperatures combined with low-elevation snowfall caused many schools and businesses in urban areas to shut down while snow was rapidly piling up in the mountains. Soon after, a powerful storm system, known as a Pineapple Express, brought warm temperatures and heavy rainfall causing landslides and flooding in the valleys, as well as extreme avalanche danger in the mountains. Without much of a noticeable break, frontal systems continued to bombard Oregon's northern and central mountains with heavy snowfall while drenching Oregon's southern mountains with copious amounts of rain.

It is critical to note that one wet month is not enough to overcome the significant moisture deficit caused by four months of very dry weather. As of March 1, most of Oregon's mountains still have below normal snowpack levels and remain behind in precipitation totals for the water year. Many reservoirs in the state are storing well below normal amounts of water, and summer streamflows are expected to be below average for most of the state. Unless the spring months bring significant snow and rainfall, water users in the southern and eastern regions of the state are likely to experience water supply shortages during the coming summer.

As a result of well-below normal snowpack levels and drought conditions, the Governor has declared a state of emergency for the following counties: Klamath, Lake, Harney and Malheur. More drought declaration requests from the drier regions of Oregon will likely follow unless March brings relentless moisture. For the latest drought updates for Oregon, please refer to the Drought Monitor: <http://droughtmonitor.unl.edu/>

## SNOWPACK

Oregon's mountains experienced a significant improvement in snowpack conditions during the month of February. More than half of Oregon SNOTEL sites actually doubled the amount of snow on the ground as a result of the stormy February weather. Unfortunately, this boost was not enough to reach normal March 1 snow levels.

In general, snowpack conditions decline as you move south across the state. Oregon's northern mountains have the best March 1 snowpack in the state (70-90% of normal). A few locations in northeastern Oregon even have above normal snowpack conditions. Snowpack levels across the central Oregon region are around 50-70% of normal as of March 1, while southern Oregon basins remain well behind normal (30-50% of normal).

The southwest region of Oregon has the lowest snowpack conditions in the state. As of March 1, mountain snowpack in the Rogue, Umpqua, and Klamath basins is about one-third of normal. Elevations below 5000 feet in the southern reaches of these basins are snow free. In addition, one dozen long-term SNOTEL and snow courses have set new record lows for the March 1 snowpack in southern Oregon.

The likelihood of achieving normal peak snowpack levels across central and southern Oregon this year is slim, but history has proven that snowpack conditions can certainly improve during March. As an example, 1991 and 1981 had very low March 1 snow levels, similar to the 2014 conditions in southern Oregon. Both of those years had an unusually snowy March and April, boosting the snowpack during a season when the snowpack is usually melting. While the 2014 snowpack levels are likely going to remain well below their normal peak levels, there is the possibility of a cool and wet spring, which would allow for delayed snowmelt timing and provide some relief for water users.

## **PRECIPITATION**

February precipitation blew the previous four dry months out of the park. Monthly precipitation totals ranged from 133% of average in the Umatilla, Walla Walla and Willow basins of northern Oregon up to 223% of average in the upper Deschutes and Crooked River basins in the central part of the state.

Thanks to the February moisture boost, water year precipitation totals for Oregon received a significant increase this month. However, the water year totals are still behind normal, ranging from 51% of normal in Lake County up to 88% in the Grande Ronde, Powder, Burnt and Imnaha basins of northeast Oregon.

## **RESERVOIRS**

Reservoir storage is still well below normal across most of Oregon. The basins of southern and eastern Oregon that are experiencing very low snowpack levels also have many reservoirs that are below 70% of average as of March 1. Reservoir operators will be monitoring the situation carefully over this next month. A repeat of February's ample precipitation would provide a welcome buffer for the expected low summer streamflows.

The March 1 storage at 26 major Oregon reservoirs analyzed in this publication was 68% percent of normal. As of March 1, water storage at these reservoirs totaled 1312 thousand acre feet (kaf), representing 41 percent of useable capacity. Last year at this time these same reservoirs stored 1632 kaf of water, or 51 percent of useable capacity.

## **STREAMFLOW**

For the first time since October, many streams and rivers had near normal to above normal streamflows in February. In some cases in western and central Oregon, the precipitation drove the rivers to flood stage. While one wet month induced short-term water excesses, the outlook for summer streamflows remains drier than usual in many parts of Oregon. One wet month is just not enough to correct the damage done by the four previous dry months. However, it did boost most summer streamflow forecasts from the February 1 report by about 5 to 30% of normal.

As of March 1, streamflow forecasts throughout the state are projected to be much lower than normal this coming summer. Water supply conditions generally decrease moving south to north across Oregon. April through September streamflow forecasts are predicted to be in the 30-60% of average range across much of the southern and eastern basins of Oregon. Streamflows are forecast to be slightly better across the middle swath of the state (Willamette, Deschutes, John Day, Burnt and Powder Rivers) where April through September streamflow volumes are expected to range from 65 to 90% of average. River basins in the northern part of the state have had the most snowfall and moisture in the high country. As a result, the summer streamflow forecasts for these rivers range from 75 to 95% of average.

A summary of streamflow forecasts for Oregon follows:

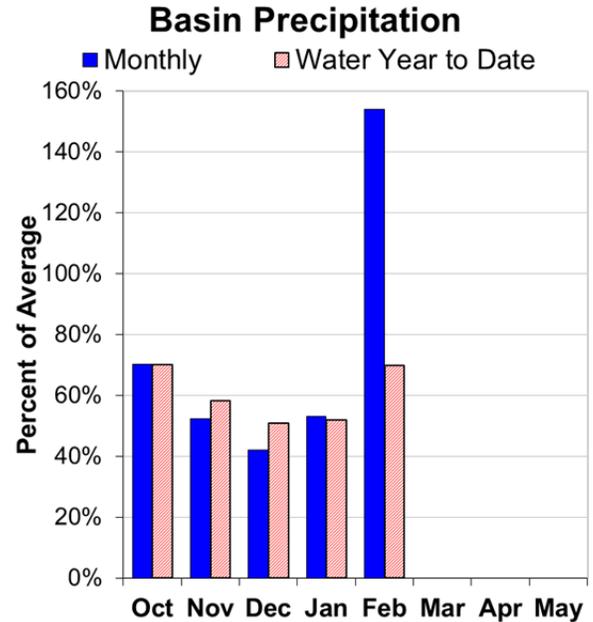
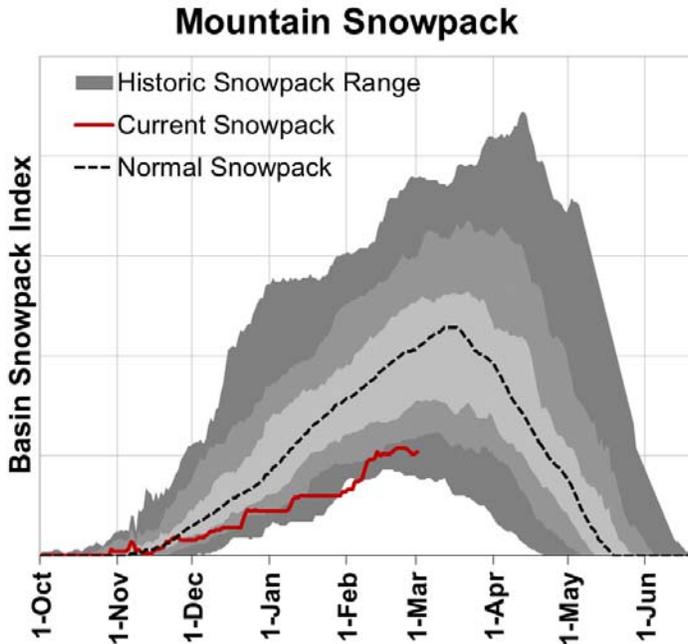
<b>STREAM</b>	<b>Median Forecast (April through September)</b>	
	<b>Volume (Acre-Feet)</b>	<b>Percent of Average</b>
Owyhee Reservoir Inflow	136,000	34
Grande Ronde R at Troy	1,100,000	84
Umatilla R at Pendleton	140,000	92
Deschutes R at Benham Falls	425,000	88
Willamette R at Salem	4,090,000	86
Rogue R at Raygold	515,000	64
Upper Klamath Lake Inflow	190,000	40
Silvies R nr Burns	26,000	28

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, 2014



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 49% of normal. This is significantly higher than last month when the snowpack was 39% of normal.

### PRECIPITATION

February precipitation was 154% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 70% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at published reservoirs was 36% of average and 19% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 28% to 38% of average for the April through September period. Overall, forecasts remain similar to last month's report. The combined streamflow forecasts and current reservoir storage levels indicate that water users in the Owyhee and Malheur basins should anticipate water shortages this coming summer and begin to prepare accordingly.

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 - March 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)	
Malheur R nr Drewsey	MAR-JUL	14.9	29	42	38	57	83	112
	APR-JUL	3.0	11.7	21	28	33	55	75
	APR-SEP	8.8	18.9	28	38	39	58	74
NF Malheur R at Beulah (2)	MAR-JUL	13.1	22	30	39	39	54	76
Owyhee R nr Rome	MAR-JUL	26	72	100	19	189	320	515
	MAR-SEP	26	74	111	21	200	335	530
	APR-SEP	14.6	44	104	28	189	315	365
Owyhee R bl Owyhee Dam (2)	MAR-JUL	33	78	120	22	171	260	555
	MAR-SEP	49	99	144	25	197	290	585
	APR-SEP	41	91	136	34	190	285	405

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

OWYHEE AND MALHEUR BASINS  
Watershed Snowpack Analysis - March 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 (agency Valley Dam)	60.0	22.2	22.2	32.1	Owyhee	10	55	40
Bully Creek	30.0	10.5	12.6	16.4	Upper Malheur	4	68	56
Lake Owyhee Near Nyssa	715.0	127.0	303.6	392.6	Jordan Creek	2	48	32
Warm Springs	191.0	27.1	68.8	82.2	Willow Creek	2	49	48

\* 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.

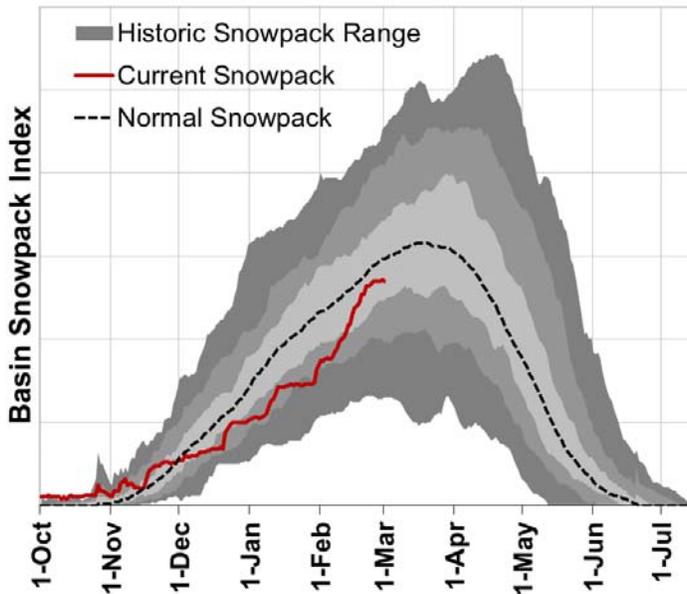
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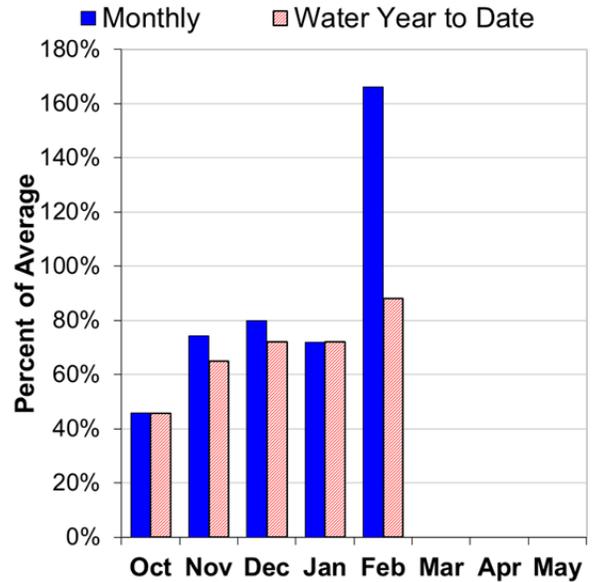
# Grande Ronde, Powder, Burnt and Imnaha Basins

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 90% of normal. This is significantly higher than last month when the snowpack was 72% of normal. The snowpack in this region is the highest in the state. However, the Burnt River basin snowpack is lagging behind the rest of the basin.

### PRECIPITATION

February precipitation was 166% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 88% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at published reservoirs was 56% of average and 31% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 66% to 97% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Water users in the southern part of this region (Burnt/Powder/Pine Basins) should expect below normal to well below normal summer water supplies, while those relying on the northern drainages (Grande Ronde/Imnaha/Wallowa Basins) should expect slightly below normal to near normal 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 - March 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Burnt R nr Hereford (2)	MAR-JUL	10.0	22	30	65	38	50	46
	APR-SEP	2.2	14.6	23	66	31	44	35
Deer Ck nr Sumpter	MAR-JUL	6.5	9.7	11.9	64	14.1	17.3	18.5
Powder R nr Sumpter	MAR-JUL	27	38	46	73	54	65	63
	APR-JUL	19.0	30	38	72	46	57	53
	APR-SEP	18.9	31	39	72	47	59	54
Wolf Ck Reservoir Inflow (2)	MAR-JUN	7.6	11.2	13.7	76	16.2	19.8	18.1
Pine Ck nr Oxbow	MAR-JUL	84	123	149	75	175	215	200
	APR-JUL	62	93	115	73	137	168	157
	APR-SEP	64	97	119	73	141	174	163
Imnaha R at Imnaha	APR-JUL	140	188	220	86	250	300	255
	APR-SEP	151	200	235	84	270	320	280
Lostine R nr Lostine	APR-JUL	89	98	104	98	110	119	106
	APR-SEP	96	105	112	97	119	128	115
Bear Ck nr Wallowa	APR-SEP	49	58	63	97	68	77	65
Catherine Ck nr Union	APR-JUL	41	51	57	95	63	73	60
	APR-SEP	44	53	60	94	67	76	64
Grande Ronde R at Troy (1)	MAR-JUL	845	1140	1270	84	1400	1700	1510
	APR-SEP	665	965	1100	84	1240	1530	1310

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

GRANDE RONDE, POWDER, BURNT AND IMNAHA BASINS Reservoir Storage (1000 AF) - End of February					GRANDE RONDE, POWDER, BURNT AND IMNAHA BASINS Watershed Snowpack Analysis - March 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr      Median	
		This Year	Last Year	Avg				
Phillips Lake (Mason Dam)	73.5	13.2	28.5	34.8	Upper Grande Ronde	7	107	94
Thief Valley	17.4	13.9	13.7	15.3	Wallowa	4	124	112
Unity	25.2	8.9	9.0	14.5	Imnaha	4	122	95
Wallowa Lake	37.5	20.1	21.4	16.4	Powder	12	105	87
Wolf Creek	10.4	2.9	2.6	3.4	Burnt	4	75	69

\* 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.

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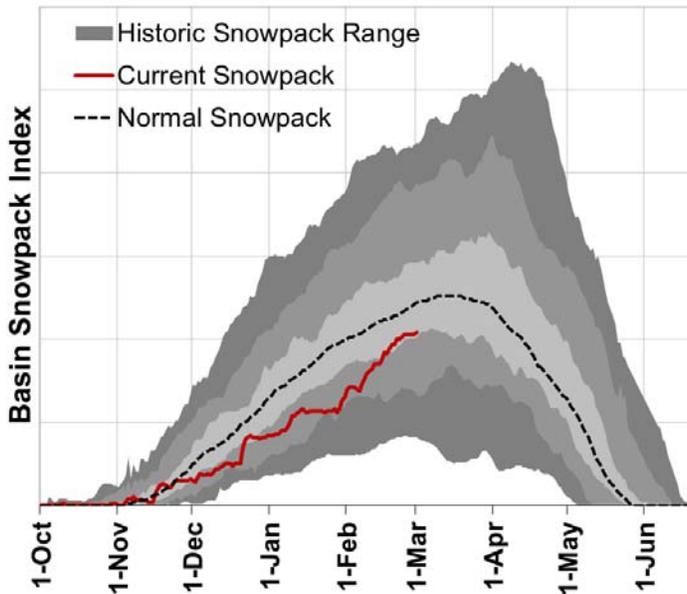
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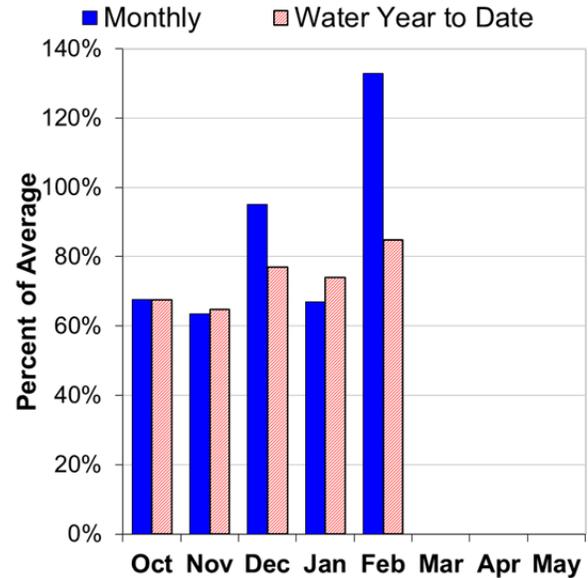
# Umatilla, Walla Walla, and Willow Basins

March 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 85% of normal. This is significantly higher than last month when the snowpack was 70% of normal.

### PRECIPITATION

February precipitation was 133% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 85% of average.

### RESERVOIR

Reservoir storage across the basin is currently below average. As of March 1, storage at published reservoirs was 84% of average and 45% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 66% to 94% of average for the April through September period. Overall, forecasts increased slightly from last month's report. Water users in the basins can expect well below normal to slightly below normal streamflows this summer, depending on their location.

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 - March 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	3.0	6.9	9.5	64	12.1	16.0	14.9
	APR-SEP	1.64	4.5	6.5	66	8.5	11.4	9.8
McKay Ck nr Pilot Rock	APR-SEP	5.7	17.2	25	81	33	44	31
Rhea Ck nr Heppner	MAR-JUL	0.77	4.2	6.5	59	8.8	12.2	11.1
Umatilla R ab Meacham Ck nr Gibbon	MAR-SEP	73	88	98	92	108	123	106
	APR-JUL	45	58	67	91	76	89	74
	APR-SEP	50	63	72	90	81	94	80
Umatilla R at Pendleton	MAR-SEP	153	187	210	93	235	265	225
	APR-JUL	85	116	136	93	156	187	147
	APR-SEP	89	119	140	92	161	191	153
SF Walla Walla R nr Milton-Freewater	MAR-SEP	63	71	76	95	81	89	80
	APR-JUL	40	46	50	93	54	60	54
	APR-SEP	51	57	62	94	67	73	66
Willow Ck ab Willow Ck Lake nr Hepp	MAR-JUL	0.98	4.2	6.4	63	8.6	11.8	10.1
	APR-JUL	0.190	2.8	4.6	66	6.4	9.0	7.0

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

UMATILLA, WALLA WALLA AND WILLOW BASINS  
Watershed Snowpack Analysis - March 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	15.5	17.5	23.6	Walla Walla	3	110	86
Mckay	73.8	37.2	33.5	39.2	Umatilla	5	89	85
Willow Creek	1.8	4.8	4.8	4.6	McKay Creek	3	88	93

\* 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.

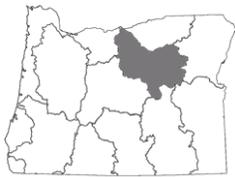
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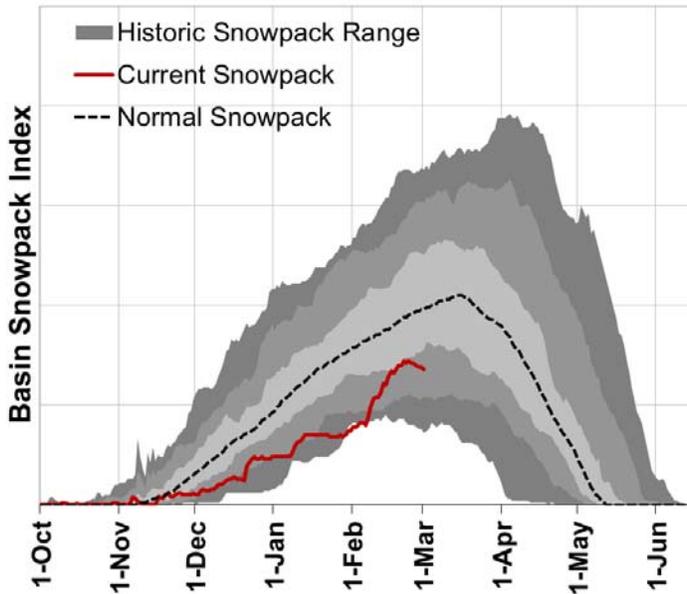
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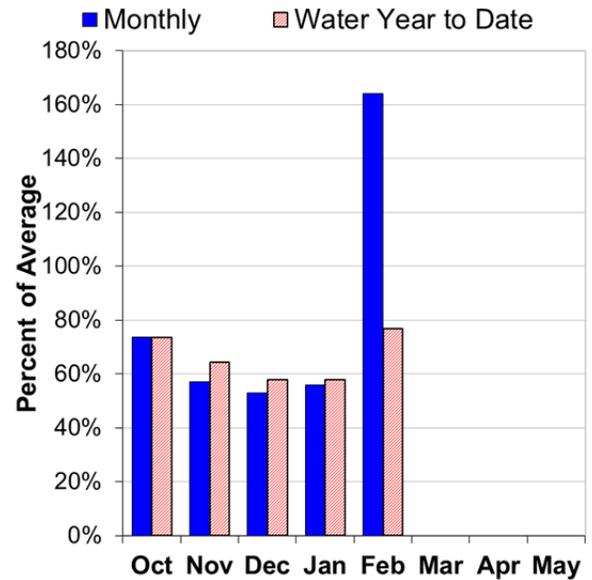
# John Day Basin

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 71% of normal. This is significantly higher than last month when the snowpack was 50% of normal.

### PRECIPITATION

February precipitation was 164% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 77% of average.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 43% to 80% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Water users in the John Day Basin are cautioned that water supply deficits are anticipated for the coming 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 - March 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)
Strawberry Ck nr Prairie City	MAR-JUL	3.2	4.8	5.8	68	6.8	8.4	8.5		
	APR-SEP	3.3	4.9	6.0	68	7.1	8.7	8.8		
Mountain Ck nr Mitchell	MAR-JUL	0.44	1.74	2.9	46	4.1	5.8	6.3		
	APR-SEP	0.39	1.07	2.1	43	3.1	4.6	4.9		
Camas Ck nr Ukiah	MAR-JUL	24	34	40	82	46	56	49		
	APR-SEP	12.2	22	28	80	34	44	35		
MF John Day R at Ritter	MAR-JUL	59	91	112	72	133	165	156		
	APR-SEP	43	72	92	73	112	141	126		
NF John Day R at Monument	MAR-JUL	330	475	570	75	665	810	765		
	APR-SEP	240	365	455	76	545	670	600		

JOHN DAY BASIN  
Reservoir Storage (1000 AF) - End of February

JOHN DAY BASIN  
Watershed Snowpack Analysis - March 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	79	79
					John Day above Kimberly	5	74	60

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

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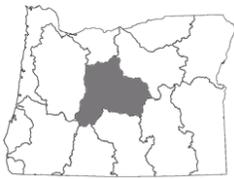
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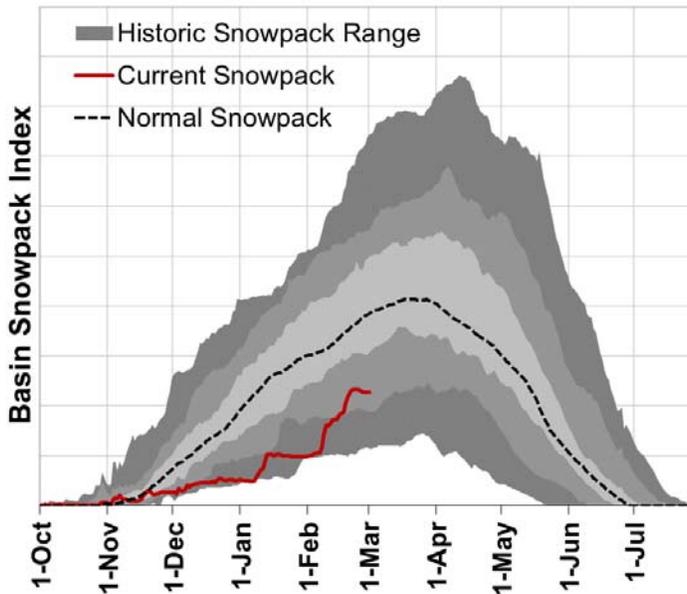
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



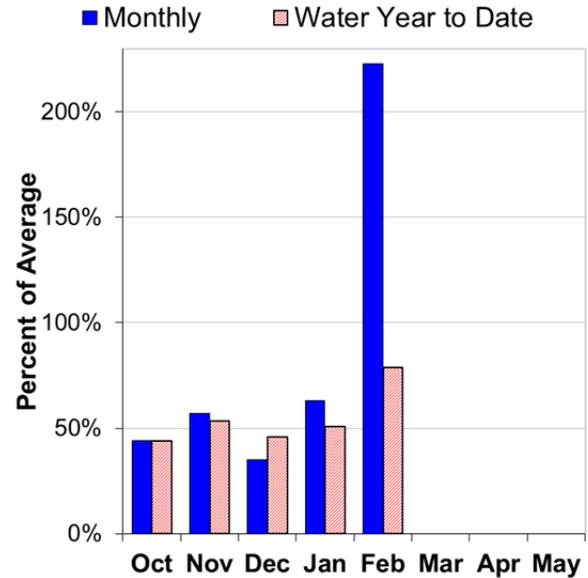
# Upper Deschutes and Crooked Basins

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 62% of normal. This is significantly higher than last month when the snowpack was 34% of normal.

### PRECIPITATION

February precipitation was 223% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 79% of average.

### RESERVOIR

Reservoir storage across the basin is currently above average. As of March 1, storage at published reservoirs was 109% of average and 77% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 19% to 88% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Streamflow forecasts in the Crooked and Little Deschutes River Basins are extremely low for the summer of 2014, while summer streamflows for the western drainages of the Deschutes Basin are forecast to be slightly higher, but still well below normal.

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 - March 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)	
Deschutes R bl Snow Ck nr La Pine	MAR-JUL	19.1	26	31	86	36	43	36
	MAR-SEP	34	42	48	83	54	62	58
	APR-JUL	15.3	21	25	83	29	35	30
	APR-SEP	31	38	43	83	48	55	52
Crane Prairie Reservoir Inflow (2)	MAR-JUL	38	47	54	82	61	70	66
	MAR-SEP	59	70	78	80	86	97	97
	APR-JUL	32	40	45	80	50	58	56
	APR-SEP	52	62	69	78	76	86	88
Crescent Ck nr Crescent (2)	MAR-JUL	4.3	9.4	12.8	74	16.2	21	17.2
	MAR-SEP	4.8	10.0	13.6	70	17.2	22	19.5
	APR-JUL	3.4	7.7	10.7	71	13.7	18.0	15.0
	APR-SEP	4.2	8.6	11.6	67	14.6	19.0	17.4
Little Deschutes R nr La Pine (2)	MAR-JUL	22	34	42	55	50	62	77
	MAR-SEP	22	35	44	53	53	66	83
	APR-JUL	9.8	19.5	26	41	33	42	63
	APR-SEP	11.4	23	31	45	39	51	69
Whychus Ck nr Sisters	MAR-JUL	28	31	33	85	35	38	39
	MAR-SEP	36	40	42	82	44	48	51
	APR-JUL	24	27	29	83	31	34	35
	APR-SEP	34	37	39	83	41	44	47
Prineville Reservoir Inflow (2)	MAR-JUL	8.6	24	43	25	80	134	171
	MAR-SEP	6.8	22	41	24	78	133	171
	APR-JUL	5.1	13.3	21	21	47	85	102
	APR-SEP	4.1	12.2	19.8	19	46	86	102
Ochoco Reservoir Inflow (2)	MAR-JUL	2.6	6.6	11.7	35	16.8	24	33
	MAR-SEP	1.60	5.6	10.8	34	16.0	24	32
	APR-JUL	1.47	3.4	7.9	38	12.4	19.0	21
	APR-SEP	1.20	3.0	7.1	36	11.6	18.2	20
Deschutes R at Benham Falls nr Bend	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	385	410	425	88	440	465	485

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

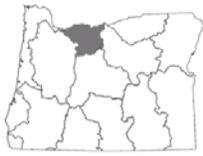
UPPER DESCHUTES AND CROOKED BASINS Reservoir Storage (1000 AF) - End of February					UPPER DESCHUTES AND CROOKED BASINS Watershed Snowpack Analysis - March 1, 2014			
Reservoir	Usable Capacity	*** This Year	Usable Storage Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	% of Median
Crane Prairie	55.3	47.4	48.4	39.8	Crooked	4	58	52
Crescent Lake	86.9	67.3	70.7	47.5	Little Deschutes	4	57	52
Ochoco	47.5	16.2	23.3	23.4	Deschutes above Wickiup	4	63	61
Prineville	153.0	100.5	91.8	98.9	Tumalo and Squaw Creeks	4	85	76
Wickiup	200.0	187.7	187.9	176.1				

\* 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.

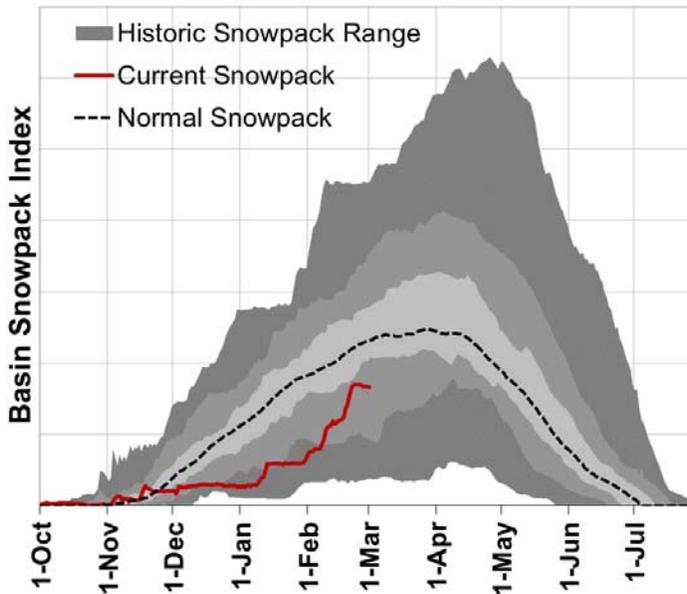
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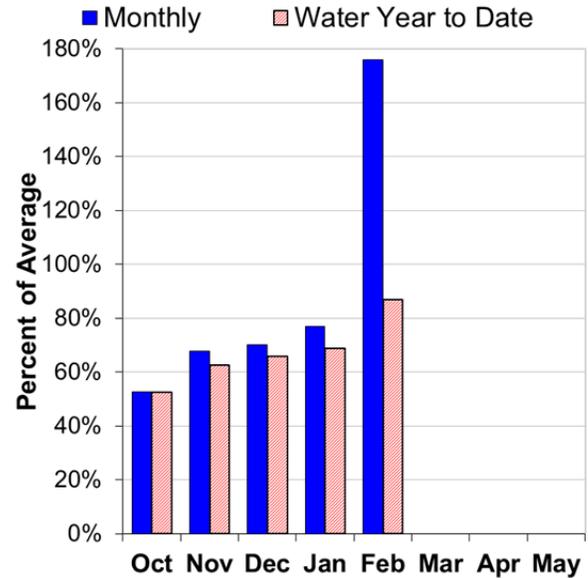
# Hood, Sandy, and Lower Deschutes Basins

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 71% of normal. This is significantly higher than last month when the snowpack was 39% of normal.

### PRECIPITATION

February precipitation was 176% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 87% of average.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 87% to 93% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Water users in the basin can expect below normal to slightly below normal streamflows for the summer of 2014.

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 - March 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	67	89	104	87	119	141	120		
	APR-SEP	80	105	121	87	137	162	139		
Hood R at Tucker Bridge	APR-JUL	146	178	200	89	220	255	225		
	APR-SEP	176	210	235	89	260	295	265		
Sandy R nr Marmot	APR-JUL	220	260	290	94	320	360	310		
	APR-SEP	260	305	335	93	365	410	360		

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

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

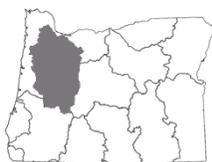
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Clear Lake (wasco Dam)	11.9	4.5	6.3	3.8	Hood River	6	80	74
					Mile Creeks	2	92	73
					White River	7	84	73

\* 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.

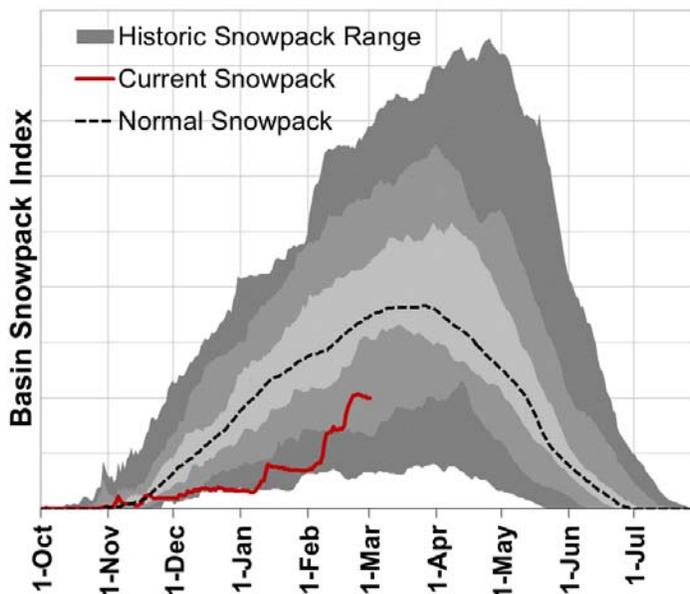
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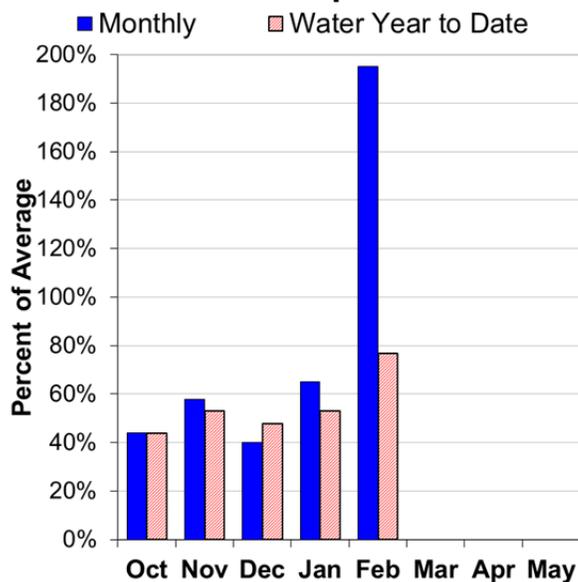
# Willamette Basin

March 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 57% of normal. This is significantly higher than last month when the snowpack was 26% of normal.

### PRECIPITATION

February precipitation was 195% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 77% of average.

### RESERVOIR

Reservoir storage across the basin is currently above average. As of March 1, storage at published reservoirs was 110% of average and 92% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 81% to 90% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Water users in the basin can expect below normal to slightly below normal streamflows for the summer of 2014.

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 - March 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	77	92	102	89	112	127	115
	APR-SEP	104	121	133	86	145	162	155
Clackamas R ab Three Lynx	APR-JUL	280	335	375	83	415	470	450
	APR-SEP	355	415	455	85	495	555	535
Clackamas R at Estacada	APR-JUL	375	460	520	83	580	665	625
	APR-SEP	470	560	620	85	680	770	730
Detroit Lake Inflow (1,2)	MAR-MAY	310	430	485	90	540	660	540
	APR-JUL	285	400	450	85	500	615	530
	APR-SEP	355	475	530	87	585	705	610
Little North Santiam R nr Mehama (1)	MAR-MAY	91	128	145	92	162	199	157
	APR-JUL	57	98	116	87	134	175	133
	APR-SEP	67	107	125	89	143	183	141
North Santiam R at Mehama (1,2)	MAR-MAY	420	620	710	90	800	1000	790
	APR-JUL	430	565	625	84	685	820	740
	APR-SEP	520	655	720	86	785	920	840
Green Peter Lake Inflow (1,2)	MAR-MAY	151	255	305	88	355	460	345
	APR-JUL	127	210	250	89	290	375	280
	APR-SEP	141	225	265	90	305	390	295
Foster Lake Inflow (1,2)	MAR-MAY	475	545	575	89	605	675	645
	APR-JUL	215	375	450	85	525	685	530
	APR-SEP	250	410	485	86	560	720	565
South Santiam R at Waterloo (2)	MAR-MAY	360	495	590	84	685	820	700
	APR-JUL	265	390	475	86	560	685	555
	APR-SEP	310	430	515	87	600	720	590

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Salem - (503) 399-5746; Dallas - (503) 623-5534  
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WILLAMETTE BASIN  
Streamflow Forecasts - March 1, 2014

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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)	
McKenzie R bl Trail Bridge (2)	MAR-MAY	158	181	196	89	210	235	220
	APR-JUL	182	205	220	85	235	260	260
	APR-SEP	250	275	295	86	315	340	345
Cougar Lake Inflow (1,2)	MAR-MAY	106	156	178	85	200	250	210
	APR-JUL	110	149	166	81	183	220	205
	APR-SEP	134	172	190	81	210	245	235
Blue Lake Inflow (1,2)	MAR-MAY	46	80	96	87	112	146	110
	APR-JUL	36	62	73	87	84	110	84
	APR-SEP	38	63	74	86	85	110	86
McKenzie R nr Vida (1,2)	MAR-MAY	550	740	825	88	910	1100	940
	APR-JUL	605	760	830	86	900	1050	970
	APR-SEP	795	965	1040	87	1120	1280	1190
Hills Creek Reservoir Inflow (1,2)	MAR-MAY	136	220	255	89	290	375	285
	APR-JUL	131	200	235	85	270	340	275
	APR-SEP	162	235	270	86	305	380	315
MF Willamette R bl NF	MAR-MAY	345	545	635	89	725	925	715
	APR-JUL	315	515	610	88	705	905	695
	APR-SEP	380	595	695	88	795	1010	790
Lookout Point Lake Inflow (1,2)	MAR-MAY	370	575	670	90	765	970	745
	APR-JUL	345	535	620	86	705	895	725
	APR-SEP	420	620	710	86	800	1000	825
Fall Creek Lake Inflow (1,2)	MAR-MAY	57	98	116	85	134	175	136
	APR-JUL	39	75	92	84	109	145	109
	APR-SEP	31	76	97	86	118	163	113
Cottage Grove Lake Inflow (1,2)	MAR-MAY	21	43	53	91	63	85	58
	APR-JUL	5.3	26	35	85	44	65	41
	APR-SEP	9.2	29	38	88	47	67	43

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 Salem - (503) 399-5746; Dallas - (503) 623-5534  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>

WILLAMETTE BASIN  
Streamflow Forecasts - March 1, 2014

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)	
Dorena Lake Inflow (1,2)	MAR-MAY	73	129	155	89	181	235	174
	APR-JUL	42	96	120	88	144	198	136
	APR-SEP	43	100	125	90	150	205	139
Scoggins Ck nr Gaston (2)	MAR-JUL	12.7	18.2	22	88	26	31	25
Willamette R at Salem (1,2)	MAR-MAY	2540	3810	4390	85	4970	6240	5170
	APR-JUL	1660	3030	3660	85	4290	5660	4310
	APR-SEP	2060	3460	4090	86	4720	6120	4730

WILLAMETTE BASIN  
Reservoir Storage (1000 AF) - End of February

WILLAMETTE BASIN  
Watershed Snowpack Analysis - March 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Blue River	85.5	40.7	27.0	34.6	Clackamas	6	68	62
Cottage Grove	29.8	10.9	10.8	11.0	McKenzie	7	56	60
Cougar	155.2	103.0	63.9	85.4	Row River	1	19	23
Detroit	300.7	315.1	191.3	252.3	Santiam	6	42	55
Dorena	70.5	23.5	12.1	26.5	Middle Fork Willamette	6	54	55
Fall Creek	115.5	54.7	40.1	50.3				
Fern Ridge	109.6	44.5	22.6	42.5				
Foster	29.7	25.8	29.6	27.7				
Green Peter	268.2	281.4	229.4	264.2				
Hills Creek	200.2	164.1	138.4	154.3				
Lookout Point	337.0	280.4	207.6	216.2				
Timothy Lake	61.7	57.4	48.5	51.2				
Henry Hagg Lake (Scoggins Dam)	53.0	48.6	40.7	45.2				

\*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  
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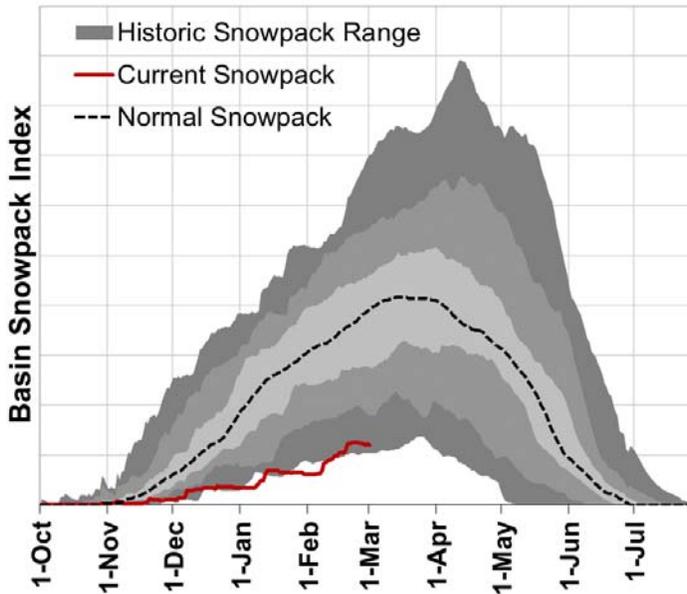
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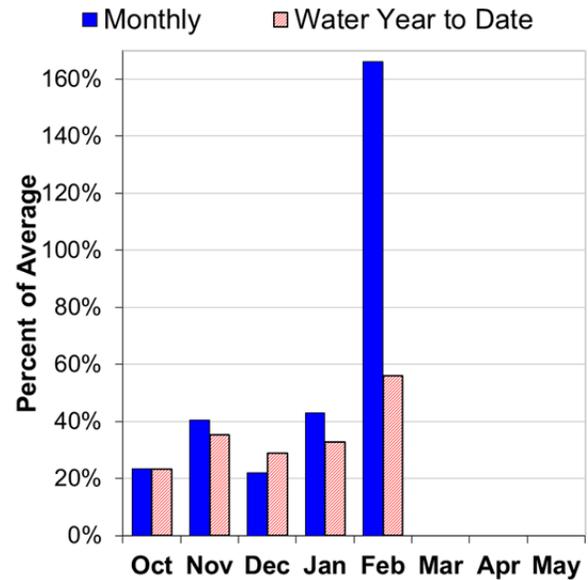
# Rogue and Umpqua Basins

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 28% of normal. This is significantly higher than last month when the snowpack was 18% of normal; however, this region still has the lowest snowpack conditions in the state. The Siskiyou Mountains are recording lower snowpack levels than the Cascades mountains in this region. Six long-term snow measurement sites in the basin have set a new record low for March 1 snowpack. In general, the mountains are snow-free below 5000 feet as of March 1.

### PRECIPITATION

February precipitation was 166% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 56% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at published reservoirs was 76% of average and 48% percent of capacity.

### STREAMFLOW FORECAST

Streamflow forecasts in the basin range from 37% to 79% of average for the April through September period. Overall, forecasts increased slightly from last month's report. Without significant spring rainfall, water users in the Rogue and Umpqua basins should anticipate water shortages this coming summer and begin to prepare accordingly.

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 - March 1, 2014

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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)	
Cow Ck nr Azalea (2)	MAR-JUL	3.2	7.5	14.5	58	21	32	25
	APR-JUL	2.2	4.5	8.8	60	13.1	19.5	14.7
	APR-SEP	2.1	4.7	9.2	58	13.7	20	15.9
North Umpqua R at Winchester	APR-JUL	350	505	605	78	705	860	775
	APR-SEP	440	595	700	79	805	960	890
South Umpqua R at Tiller	APR-JUL	45	96	131	68	166	215	193
	APR-SEP	52	103	138	69	173	225	200
South Umpqua R nr Brockway	APR-JUL	46	171	255	65	340	465	390
	APR-SEP	53	179	265	65	350	475	410
Hyatt Reservoir Inflow	APR-JUL	0.070	0.43	0.85	24	1.41	2.5	3.6
Lost Creek Lake Inflow (2)	MAR-JUL	320	405	465	70	525	610	665
	MAR-SEP	400	495	560	71	625	720	790
	APR-JUL	250	315	360	69	405	470	520
	APR-SEP	330	405	455	71	505	580	645
Rogue R at Raygold (2)	APR-JUL	185	325	420	62	515	655	675
	APR-SEP	270	415	515	64	615	760	805
Rogue R at Grants Pass (2)	APR-JUL	169	330	440	61	550	710	725
	APR-SEP	230	405	520	62	635	810	845
Applegate Lake Inflow (2)	MAR-JUL	20	39	55	35	73	105	155
	MAR-SEP	22	41	57	35	76	109	161
	APR-JUL	13.3	27	39	36	53	78	109
	APR-SEP	15.2	29	42	37	56	81	115
Sucker Ck bl Ltl Grayback Ck	APR-JUL	7.1	13.8	19.5	35	26	38	55
	APR-SEP	8.7	15.8	22	37	29	41	59
Illinois R at Kerby	APR-JUL	39	71	99	53	130	186	188
	APR-SEP	42	74	102	53	133	188	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 February					ROGUE AND UMPQUA BASINS Watershed Snowpack Analysis - March 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
Applegate	75.2	18.7	18.1	25.0	Applegate	5	13	11
Emigrant Lake	39.0	15.7	27.7	27.2	Bear Creek	4	15	13
Fish Lake	8.0	4.2	5.0	5.0	Little Butte Creek	6	22	19
Fourmile Lake	16.1	4.9	8.5	7.5	North Umpqua	5	34	37
Howard Prairie	60.0	33.5	37.3	37.9	Rogue River above Grant	18	26	24
Hyatt Prairie	16.1	9.0	13.1	10.9				
Lost Creek	315.0	242.1	214.9	219.0				

\* 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.

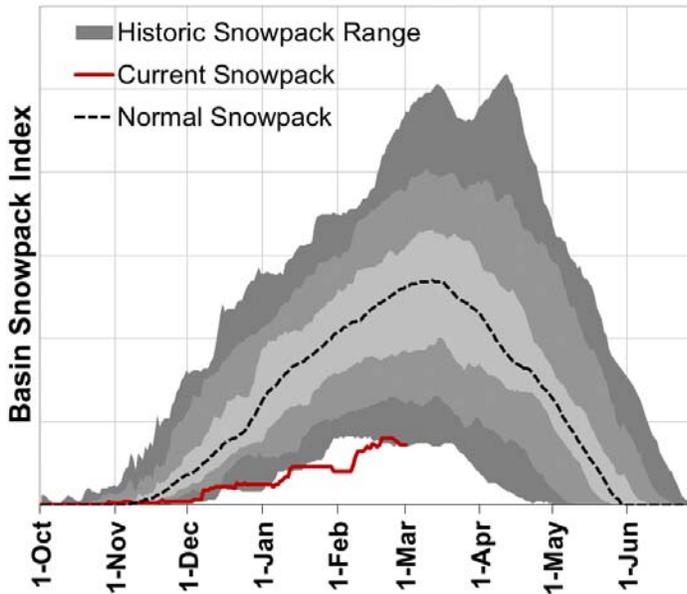
For more information contact your local Natural Resources Conservation Service office:  
 Roseburg - (541) 673-8316; Medford - (541) 776-4267  
 Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



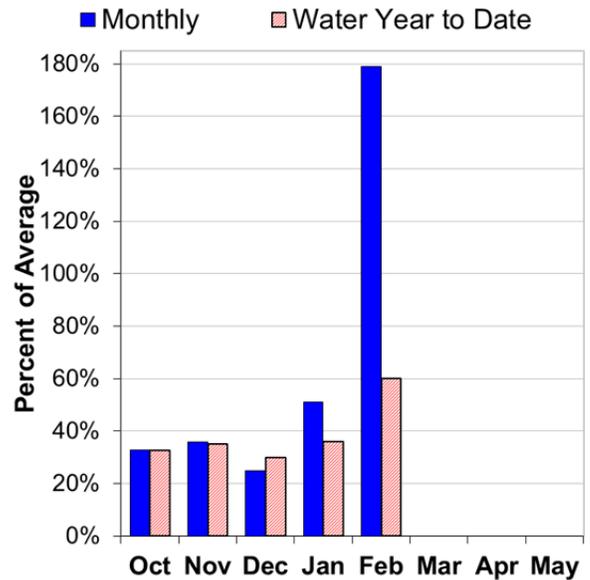
# Klamath Basin

March 1, 2014

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 31% of normal. This is significantly higher than last month when the snowpack was 20% of normal; however, this region still has the second lowest snowpack conditions in the state. The mountains are generally snow-free below 5000 feet. Taylor Butte SNOTEL (5030 ft) was snow-free on March 1 for the first time since it was installed in 1979. Five long-term snow measurement sites in the basin set new record lows for March 1 snowpack.

### PRECIPITATION

February precipitation was 179% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 60% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at published reservoirs was 65% of average and 38% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 15% to 44% of average for the April through September period. Overall, forecasts increased significantly from last month's report. The combined streamflow forecasts and current reservoir storage levels indicate that water users in the Klamath Basin should anticipate water shortages this coming summer and begin to prepare accordingly.

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/>

KLAMATH BASIN  
Streamflow Forecasts - March 1, 2014

Forecast Point	Forecast Period	<<==== Drier ==== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		Chance Of Exceeding *		Chance Of Exceeding *				
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Clear Lk Inflow (2)	MAR-JUL	0.68	5.4	18.0	26	40	73	68
	APR-SEP	0.70	2.8	11.6	33	23	41	35
Gerber Res Inflow (2)	MAR-JUL	0.32	1.92	5.4	17	14.3	27	32
	APR-SEP	0.144	0.43	2.2	15	7.7	15.7	14.4
Sprague R nr Chiloquin	MAR-JUL	2.6	27	63	25	99	153	255
	MAR-SEP	5.5	39	77	28	115	171	275
	APR-SEP	4.2	26	55	26	84	126	210
Williamson R bl Sprague R nr Chiloq	MAR-JUL	55	120	165	41	210	275	400
	MAR-SEP	94	163	210	46	257	326	460
	APR-SEP	66	119	155	44	191	244	355
Upper Klamath Lk Inflow (1)	MAR-JUL	34	172	235	41	298	436	575
	MAR-SEP	58	207	275	42	343	492	655
	APR-SEP	41	143	190	40	237	339	475

KLAMATH BASIN  
Reservoir Storage (1000 AF) - End of February

KLAMATH BASIN  
Watershed Snowpack Analysis - March 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	48.6	94.7	217.4	Lost	3	2	2
Gerber	94.3	13.2	36.1	50.3	Sprague	5	41	33
Upper Klamath Lake	523.7	367.6	348.4	390.4	Upper Klamath Lake	7	49	36
					Williamson River	5	49	38

\* 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

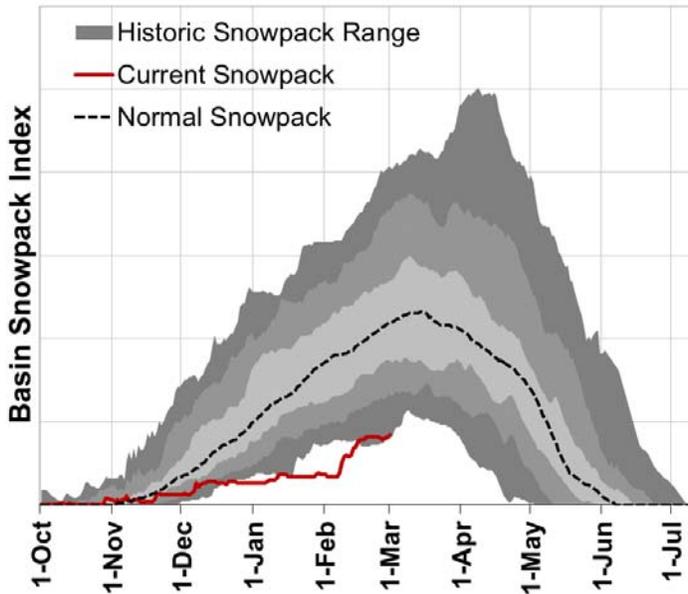
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



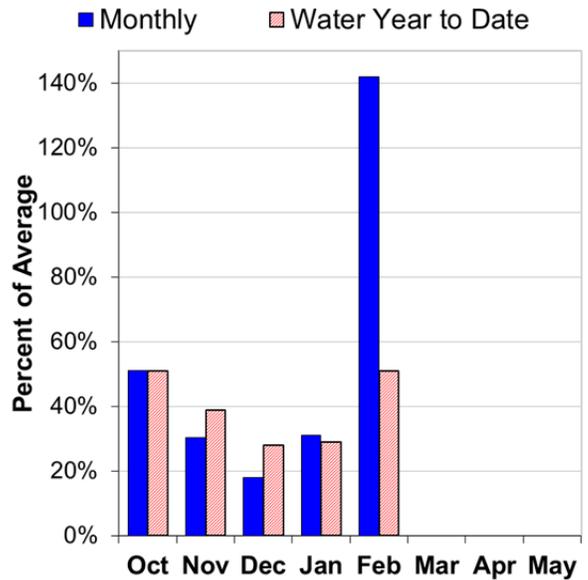
# Lake County and Goose Lake

March 1, 2014

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 35% of normal. This is significantly higher than last month when the snowpack was 18% of normal. The following long-term measurement sites set record lows for March 1 snowpack levels: Cedar Pass SNOTEL, Crazyman Flat SNOTEL, and Camas Creek #3 snow course.

### PRECIPITATION

February precipitation was 142% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 51% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at published reservoirs was 40% of average and 20% percent of capacity.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 29% to 39% of average for the April through September period. Overall, forecasts increased significantly from last month's report. The combined streamflow forecasts and current reservoir storage levels indicate that water users in the Lake County and Goose Lake basins should anticipate water shortages this coming summer and begin to prepare accordingly.

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 - March 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)		
Twentymile Ck nr Adel	MAR-JUL	1.35	4.3	8.1	30	12.4	21	27
	APR-SEP	0.87	3.0	5.0	29	7.8	13.0	17.4
Deep Ck ab Adel	MAR-JUL	12.6	21	28	35	37	51	79
	APR-SEP	9.2	17.3	24	37	32	47	65
Honey Ck nr Plush	MAR-JUL	1.04	2.9	4.7	27	7.0	11.1	17.1
	APR-SEP	0.77	2.5	4.2	30	6.3	10.3	14.1
Chewaucan R nr Paisley	MAR-JUL	17.0	27	35	42	44	59	84
	APR-SEP	13.0	22	29	39	38	52	75

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

LAKE COUNTY AND GOOSE LAKE BASINS  
Watershed Snowpack Analysis - March 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	0.8	4.7	4.4	Chewaucan River	3	46	39
Drews	63.0	13.8	35.6	32.4	Deep Creek	2	48	35
					Drew Creek	3	2	2
					Honey Creek	1	13	7
					Silver Creek (Lake Co.)	4	44	34
					Twentymile Creek	2	48	35

\* 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

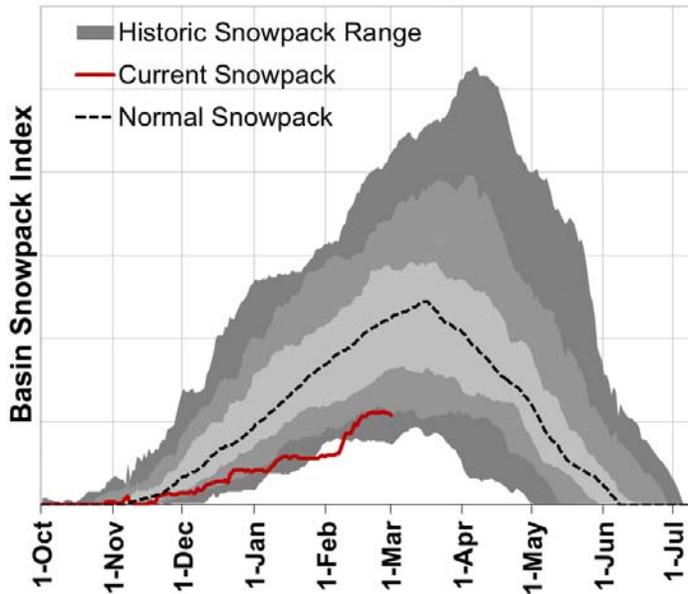
Or visit: <http://www.or.nrcs.usda.gov/snow/watersupply/>



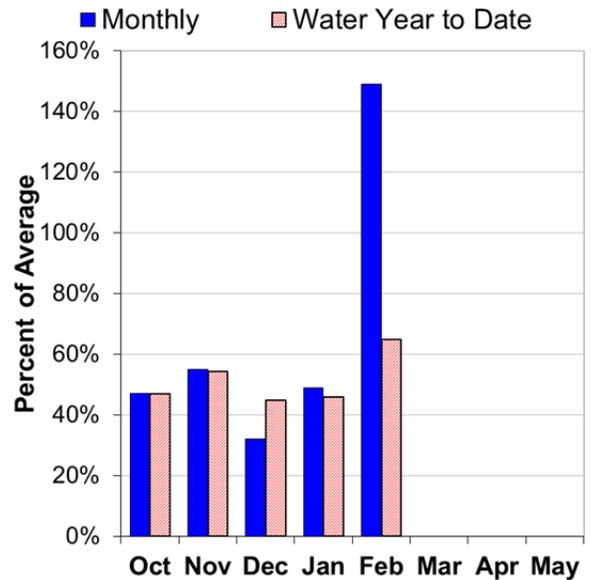
# Harney Basin

March 1, 2014

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of March 1, the basin snowpack was 48% of normal. This is significantly higher than last month when the snowpack was 34% of normal.

### PRECIPITATION

February precipitation was 149% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 65% of average.

### STREAMFLOW FORECAST

Summer streamflow forecasts in the basin range from 28% to 60% of average for the April through September period. Overall, forecasts increased significantly from last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

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 - March 1, 2014

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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)	
Silvies R nr Burns	MAR-JUL	5.2	19.9	35	28	55	92	123
	APR-SEP	1.62	12.5	26	28	43	78	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	22	33	42	58	51	67	72
	APR-SEP	22	32	41	60	51	67	68
Trout Ck nr Denio	MAR-JUL	0.170	1.21	2.4	28	4.1	7.3	8.7
	APR-SEP	0.100	1.01	2.2	28	3.8	6.9	8.0

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

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HARNEY BASIN  
Watershed Snowpack Analysis - March 1, 2014

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Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					Donner und Blitzen River	2	44	48
					Silver Creek (Harney Co)	2	50	44
					Silvies River	5	68	55
					Trout Creek	2	42	44

=====

\* 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>					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
Owyhee R nr Rome	2000 cfs	**Observed on Feb 18**			<b>May 6</b>
Owyhee R nr Rome	1000 cfs	**Observed on Feb 19**			<b>May 18</b>
Owyhee R nr Rome	500 cfs	**Observed on Feb 22**			<b>Jun 2</b>

<b>UPPER JOHN DAY BASIN</b>					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
John Day R at Service Creek	Average Daily Flow on Aug. 1st	16	100	305	<b>271</b>

<b>UPPER DESCHUTES AND CROOKED BASINS</b>					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
Crane Prairie Inflow *	Date of Peak	May 9	May 25	Jun 10	<b>May 25</b>
Crane Prairie Inflow	Peak Flow	152	290	430	<b>403</b>
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	157	205	255	<b>269</b>
Prineville Reservoir Inflow	113 cfs	Apr 19	May 12	Jun 4	<b>June 3</b>
Prineville Reservoir Inflow	75 cfs	Apr 25	May 19	Jun 12	<b>June 11</b>
Prineville Reservoir Inflow	50 cfs	May 3	May 28	Jun 22	<b>June 19</b>
Whychus Creek nr Sisters	100 cfs	Jul 15	Aug 10	Sep 6	<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 3	Jul 22	Aug 12	<b>August 8</b>
South Umpqua R at Tiller	140 cfs	Jun 5	Jun 26	Jul 17	<b>July 11</b>
South Umpqua R at Tiller	90 cfs	Jun 23	Jul 15	Aug 7	<b>August 1</b>
South Umpqua R at Tiller	60 cfs	Jul 14	Aug 11	Sep 6	<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	May 2	May 24	Jun 15	<b>June 17</b>
Honey Ck nr Plush	100 cfs	Mar 22	Apr 24	May 27	<b>May 16</b>
Honey Ck nr Plush	50 cfs	Apr 2	May 5	Jun 4	<b>June 4</b>
Twentymile Ck nr Adel	50 cfs	Mar 21	Apr 16	May 12	<b>May 30</b>
Twentymile Ck nr Adel	10 cfs	May 21	Jun 13	Jul 6	<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	Apr 1	Apr 30	May 29	<b>May 21</b>
Silvies R nr Burns	200 cfs	Apr 5	May 4	Jun 2	<b>June 2</b>
Silvies R nr Burns	100 cfs	Apr 12	May 14	Jun 15	<b>June 13</b>
Silvies R nr Burns	50 cfs	May 1	Jun 5	Jul 10	<b>July 3</b>
Donner Und Blitzen R nr Frenchglen	200 cfs	May 7	May 29	Jun 20	<b>June 20</b>
Donner Und Blitzen R nr Frenchglen	100 cfs	May 28	Jun 17	Jul 7	<b>July 9</b>

# Summary of Snowpack Data

## March 2014

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon</b>						
ANEROID LAKE SNOTEL	7400	3/01/14	68	20.7	17.0	20.2
ANNIE SPRING SNOTEL	6010	3/01/14	39	13.2	26.9	35.1
ANTHONY LAKE (REV)	7130	2/28/14	72	25.0	19.8	--
ARBUCKLE MTN SNOTEL	5770	3/01/14	34	11.4	15.0	15.2
BALD PETER	5400	3/03/14	61	21.4	21.2	26.4
BARNEY CREEK (NEW)	5840	2/27/14	17	5.2	6.4	--
BEAR GRASS SNOTEL	4720	3/01/14	58	22.3	47.3	--
BEAVER CREEK #1	4250	3/01/14	28	8.8	11.0	--
BEAVER CREEK #2	4250	3/01/14	22	6.6	6.6	9.0
BEAVER DAM CREEK	5100	3/03/14	0	.0	12.9	10.9
BEAVER RES. SNOTEL	5150	3/01/14	29	9.8	9.9	8.9
BIG RED MTN SNOTEL	6050	3/01/14	9	3.4	19.2	22.6
BIG SHEEP AM	6200	3/01/14	45	14.0	--	21.4
BIGELOW CAMP SNOTEL	5130	3/01/14	0	.0	12.9	10.6
BILLIE CK DVD SNOTEL	5280	3/01/14	14	5.3	14.9	20.6
BLAZED ALDER SNOTEL	3650	3/01/14	43	17.8	33.4	25.0
BLUE MTN SPGS SNOTEL	5870	3/01/14	31	11.3	9.5	14.4
BOURNE SNOTEL	5850	3/01/14	33	11.5	12.0	14.0
BOWMAN SPRNGS SNOTEL	4530	3/01/14	18	6.9	6.8	7.5
CALIBAN ALT	6500	3/03/14	15	4.5	23.8	25.2
CAMAS CREEK #3	5850	2/28/14	3	.8	6.4	11.4
CASCADE SUM. SNOTEL	5100	3/01/14	46	17.6	28.1	26.2
CHEMULT ALT SNOTEL	4850	3/01/14	0	.1	5.4	8.1
CLACKAMAS LK. SNOTEL	3400	3/01/14	18	6.5	10.2	12.4
CLEAR LAKE SNOTEL	3810	3/01/14	24	7.1	9.8	12.4
COLD SPRINGS SNOTEL	5940	3/01/14	26	8.7	21.1	29.9
COUNTY LINE SNOTEL	4830	3/01/14	5	2.8	5.2	4.3
CRAZYMAN FLAT SNOTEL	6180	3/01/14	9	4.8	11.5	14.8
DALY LAKE SNOTEL	3690	3/01/14	9	4.0	15.7	11.3
DEADWOOD JUNCTION	4600	3/03/14	0	.0	9.1	6.8
DERR	5670	2/24/14	20	6.7	9.6	9.2
DERR SNOTEL	5850	3/01/14	24	7.9	13.1	12.8
DIAMOND LAKE SNOTEL	5280	3/01/14	8	4.7	12.7	15.6
DOOLEY MOUNTAIN	5430	2/27/14	16	5.0	7.2	8.2
EAST EAGLE	4400	3/01/14	47	17.2	13.4	21.1
EILERTSON SNOTEL	5510	3/01/14	20	6.6	7.0	9.2
ELDORADO PASS	4600	2/27/14	2	.4	3.9	3.0
EMIGRANT SPGS SNOTEL	3800	3/01/14	11	4.5	5.8	4.1
FISH CREEK SNOTEL	7660	3/01/14	44	12.1	27.7	21.3
FISH LK. SNOTEL	4660	3/01/14	3	1.4	12.1	10.7
FOURMILE LAKE SNOTEL	5970	3/01/14	23	8.9	15.0	27.2
GERBER RES SNOTEL	4890	3/01/14	0	.0	1.5	.5
GOLD CENTER SNOTEL	5410	3/01/14	25	8.5	9.3	9.0
GOVT CORRALS AM	7450	3/01/14	18	4.9	--	--
GREENPOINT SNOTEL	3310	3/01/14	21	7.5	11.9	18.0
HART MOUNTAIN AM	6350	3/01/14	0	.0	--	1.0
HIGH PRAIRIE	6100	2/28/14	77	27.1	30.9	36.6
HIGH RIDGE SNOTEL	4920	3/01/14	55	18.1	18.0	21.4
HOGG PASS SNOTEL	4790	3/01/14	43	14.4	21.5	20.1
HOLLAND MDWS SNOTEL	4930	3/01/14	9	4.2	22.5	18.0
HOWARD PRAIRIE	4500	3/03/14	0	.0	6.8	6.6
HUNGRY FLAT	4400	2/27/14	2	.8	.0	2.1
IRISH-TAYLOR SNOTEL	5540	3/01/14	64	22.1	25.4	30.8
JUMP OFF JOE SNOTEL	3520	3/01/14	9	3.5	16.3	11.2
KING MTN #1	4500	2/27/14	0	.0	13.8	5.0
KING MTN #2 SNOTEL	4340	3/01/14	0	.0	16.0	2.4
KING MTN #3	3650	2/27/14	0	.0	3.7	.0
KING MTN #4	3050	2/27/14	0	.0	.0	.0

SNOW COURSE		ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon (continued)</b>							
LAKE CK R.S.	SNOTEL	5240	3/01/14	17	5.9	6.6	10.3
LITTLE ALPS		6200	2/28/14	34	10.2	10.6	10.4
LITTLE ANTONE (ALT)		5000	2/28/14	19	6.0	6.8	8.8
LITTLE MEADOW	SNOTEL	4020	3/01/14	32	13.5	30.4	21.2
LUCKY STRIKE	SNOTEL	4970	3/01/14	16	5.8	7.0	6.8
MADISON BUTTE	SNOTEL	5150	3/01/14	11	3.3	7.4	3.9
MARION FORKS	SNOTEL	2590	3/01/14	11	4.3	12.7	7.5
MARKS CREEK		4540	2/24/14	1	.4	3.1	3.1
MARY'S PEAK REV		3620	2/28/14	0	.0	18.2	2.3
MCKENZIE	SNOTEL	4770	3/01/14	60	24.1	36.5	36.4
MILKSHAKES	SNOTEL	5580	3/01/14	86	29.7	33.3	--
MILL CREEK MDW		4400	2/28/14	27	8.4	7.6	11.7
MILLER WOODS	SNOTEL	420	3/01/14	0	.0	.0	--
MOSS SPRINGS	SNOTEL	5760	3/01/14	68	24.5	19.0	20.9
MT ASHLAND SWBK.		6400	3/03/14	12	2.7	23.8	27.6
MT HOOD		5370	2/27/14	109	45.2	51.6	50.5
MT HOOD TEST	SNOTEL	5370	3/01/14	103	42.2	44.7	48.0
MT HOWARD	SNOTEL	7910	3/01/14	56	18.6	13.0	11.8
MUD RIDGE	SNOTEL	4070	3/01/14	46	16.4	23.2	24.1
NEW CRESCENT	SNOTEL	4910	3/01/14	15	5.1	8.6	12.0
NEW DUTCHMAN #3		6320	2/27/14	102	37.2	35.6	39.6
NORTH FK RES	SNOTEL	3060	3/01/14	24	10.0	26.5	14.8
OCHOCO MEADOWS		5200	2/24/14	18	5.4	8.1	10.0
OCHOCO MEADOW	SNOTEL	5430	3/01/14	16	6.1	8.0	10.0
PARK H.Q. REV		6550	2/28/14	74	27.8	44.0	53.2
PATTON MEADOWS	AM	6800	3/01/14	11	4.0	--	14.4
PEAVINE RIDGE	SNOTEL	3420	3/01/14	17	6.1	15.1	11.2
QUARTZ MTN	SNOTEL	5720	3/01/14	0	.0	2.0	1.5
RACING CREEK		4800	3/03/14	35	13.4	12.4	12.3
R.R. OVERPASS	SNOTEL	2680	3/01/14	0	.0	.0	.0
RED BUTTE #1		4560	2/27/14	1	.5	17.0	9.8
RED BUTTE #2		4000	2/27/14	0	.0	1.2	2.9
RED BUTTE #3		3500	2/27/14	0	.0	--	.1
RED BUTTE #4		3000	2/27/14	0	.0	.0	.0
RED HILL	SNOTEL	4410	3/01/14	73	31.7	40.8	41.7
ROCK SPRINGS	SNOTEL	5290	3/01/14	8	1.4	7.8	6.2
ROGGER MEADOWS	AM	6500	3/01/14	3	1.1	--	10.1
SADDLE MTN	SNOTEL	3110	3/01/14	0	.0	10.2	--
SALT CK FALLS	SNOTEL	4220	3/01/14	21	7.1	20.3	16.3
SANTIAM JCT.	SNOTEL	3740	3/01/14	18	8.1	17.6	15.5
SCHNEIDER MDW	SNOTEL	5400	3/01/14	60	17.6	17.5	25.3
SEINE CREEK	SNOTEL	2060	3/01/14	0	.0	.0	.0
SEVENMILE MARSH	SNTL	5700	3/01/14	27	9.0	19.1	28.7
SHERMAN VALLEY	AM	6600	3/01/14	3	1.1	--	11.3
SILVER BURN		3720	2/28/14	0	.0	12.1	11.5
SILVER CREEK	SNOTEL	5740	3/01/14	10	3.6	6.6	10.3
SILVIES	SNOTEL	6990	3/01/14	17	5.3	11.5	14.6
SKI BOWL ROAD		6000	3/03/14	6	1.5	16.0	21.0
SMITH RIDGE	SNOTEL	3330	3/01/14	0	.0	13.8	--
SNOW MTN	SNOTEL	6220	3/01/14	16	4.2	7.8	9.8
SF BULL RUN	SNOTEL	2690	3/01/14	1	.3	12.8	1.7
STARR RIDGE	SNOTEL	5250	3/01/14	11	2.8	6.1	6.2
STRAWBERRY	SNOTEL	5770	3/01/14	1	.2	3.8	4.3
SUMMER RIM	SNOTEL	7080	3/01/14	28	7.2	12.5	14.1
SUMMIT LAKE	SNOTEL	5610	3/01/14	51	17.3	28.4	31.2
SUN PASS	SNOTEL	5400	3/01/14	12	4.9	9.7	--
SWAN LAKE MTN	SNOTEL	6830	3/01/14	21	7.6	15.4	--
TANGENT		5400	2/27/14	33	11.8	14.8	18.1
TAYLOR BUTTE	SNOTEL	5030	3/01/14	0	.0	5.2	7.0
TAYLOR GREEN	SNOTEL	5740	3/01/14	46	15.9	15.1	18.1
THREE CK MEAD	SNOTEL	5690	3/01/14	33	10.4	11.4	16.1
TIPTON	SNOTEL	5150	3/01/14	28	7.7	8.3	11.1
TOKETEE AIRSTRIP	SN	3240	3/01/14	0	.0	7.0	.8
TROUT CREEK	AM	7800	3/01/14	19	5.1	--	11.5
TV RIDGE #2	AM	7000	3/01/14	29	9.6	--	14.2

SNOW COURSE		ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	MEDIAN 81-10
<b>Oregon (continued)</b>							
V LAKE	AM	6600	3/01/14	1	.3	--	5.6
WOLF CREEK	SNOTEL	5630	3/01/14	38	12.3	10.7	14.6
<b>California</b>							
ADIN MOUNTAIN		6350	3/03/14	3	1.2	9.2	10.6
ADIN MTN SNOTEL		6190	3/01/14	4	.6	8.1	10.9
CEDAR PASS SNOTEL		7030	3/01/14	20	6.0	10.7	14.2
CROWDER FLAT SNOTEL		5170	3/01/14	0	.0	4.2	4.0
DISMAL SWAMP SNOTEL		7360	3/01/14	36	11.6	19.5	24.5
<b>Idaho</b>							
MUD FLAT	SNOTEL	5730	3/01/14	3	.7	4.6	7.1
SOUTH MTN	SNOTEL	6500	3/01/14	16	6.4	10.2	15.0
<b>Nevada</b>							
BEAR CREEK SNOTEL		7800	3/01/14	34	9.5	15.8	15.8
BIG BEND SNOTEL		6700	3/01/14	12	5.1	5.9	8.4
BUCKSKIN,L SNOTEL		6700	3/01/14	17	3.9	8.2	8.1
COLUMBIA BASIN	AM	6650	3/01/14	4	1.4	5.4	8.6
DISASTER PEAK SNOTEL		6500	3/01/14	1	.5	2.6	7.6
FAWN CREEK SNOTEL		7050	3/01/14	32	8.0	11.0	13.4
FRY CANYON		6700	3/01/14	6	2.9	6.5	7.9
GOLD CREEK		6600	3/01/14	7	2.3	5.5	5.8
GRANITE PEAK SNOTEL		7800	3/01/14	33	8.0	15.5	18.3
JACK CREEK, U SNOTEL		7280	3/01/14	36	8.8	10.9	14.4
LAMANCE CREEK SNOTEL		6000	3/01/14	4	.6	5.6	11.0
LAUREL DRAW SNOTEL		6700	3/01/14	11	4.1	6.6	10.0
MERRIT MOUNTAIN	AM	7000	3/01/14	1	.4	3.3	6.2
MIDAS	(d)	7200	3/01/14	3	1.1	1.5	3.0
SEVENTYSIX CK SNOTEL		7100	3/01/14	20	5.1	6.4	10.3
STAG MOUNTAIN	AM	7700	3/01/14	2	.7	3.9	4.8
TAYLOR CANYON SNOTEL		6200	3/01/14	2	.4	4.5	5.2
TREMEWAN RANCH		5700	3/01/14	0	.0	1.1	2.0

# 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.

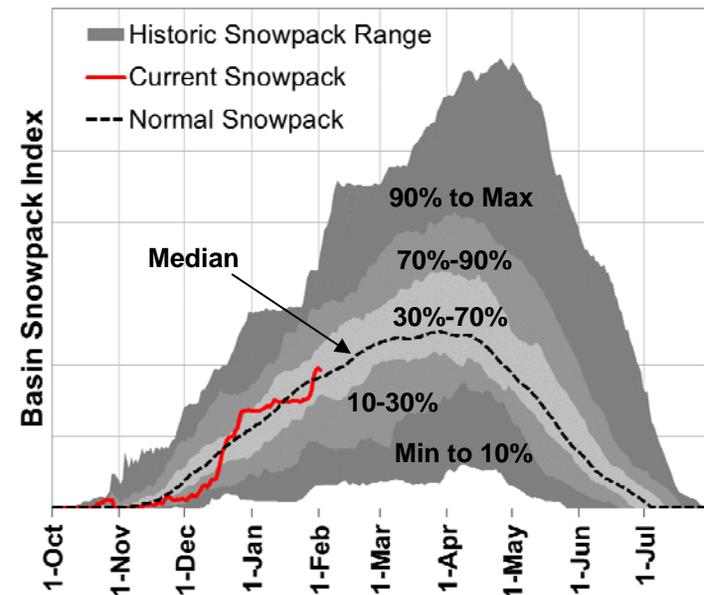
## Interpreting Snowpack Plots

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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