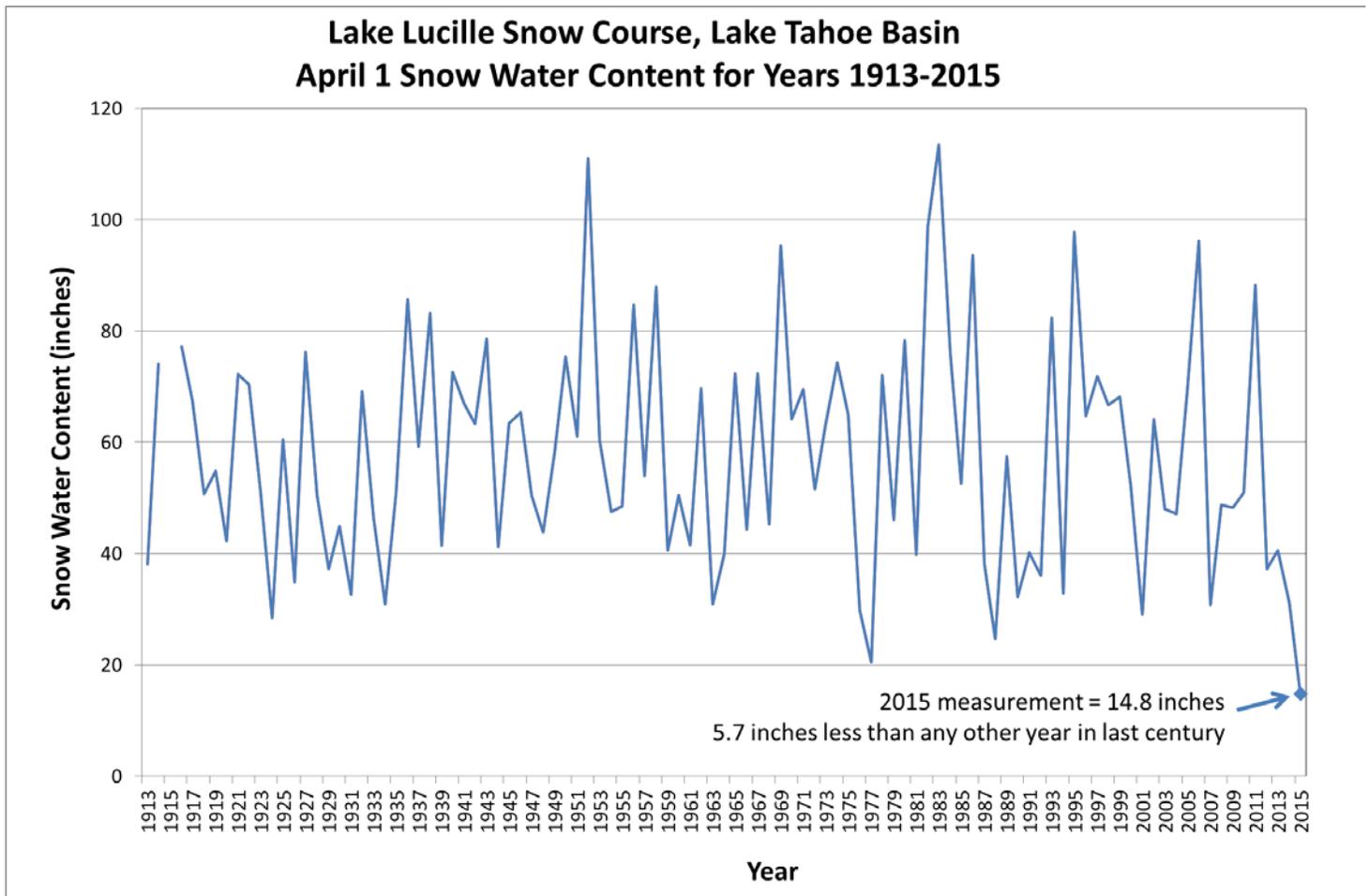


Natural Resources Conservation Service

Nevada Water Supply Outlook Report

April 1, 2015



Lowest Snow in a Century

The April 1 snowpack in the mountains around Lake Tahoe is the lowest in over a century of measurements. [Dr. James Church, the father of snow surveying](#), set up the first snow courses in the United States near Lake Tahoe starting in 1910. Today four of these original snow courses have over 100 years of April 1 data making them the oldest snow measuring stations in the United States. These courses have been faithfully measured using snow tubes to take a core of the snowpack to determine the snow's water content. This month's snow measurement at Lake Lucille snow course, located just south of Lake Tahoe at 8,188 feet elevation, was the lowest April 1 snow water amount on record going back to 1913. Same was true at the north end of Tahoe where Donner Summit and Ward Creek #2 snow courses also set new minimum records with data going back to 1910 and 1913 respectively. The Ward Creek course was actually snow free on April 1 for the first time in its long history. Of the four long term sites only Mt. Rose snow course with data back to 1910 was not at a minimum level; it had more snow water this year than was measured in 1926 or 1931.

Water Supply Outlook Reports

Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information:

Internet: www.nv.nrcs.usda.gov/snow/

Contact: Jeff Anderson, Water Supply Specialist, jeff.anderson@nv.usda.gov or 775-857-8500 x152
Natural Resources Conservation Service, Nevada Snow Survey, 1365 Corporate Blvd, Reno, NV 89502

To join a free email subscription list please email: jeff.anderson@nv.usda.gov

How forecasts are made

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 the snow 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 produce 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.

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Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender. Persons with disabilities who require alternative means for communication of program information (e.g. Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Nevada Water Supply Outlook Report

April 1, 2015

SUMMARY

Nevadans were hoping for a miracle, but instead ended up with one of the driest March's in the last 35 years and quite possibly the lowest April 1 snow in over a century. Snow surveyors took photos of bare snow courses with flowers blooming, alpine lakes with no ice and passerby hikers wearing flip-flops instead of snow boots. One thing is for sure, 2015 will be one for the record books and not just in our region, but across much of the western United States. Record low snow exists from Arizona to Alaska. In Nevada, an unusually warm March led to earlier than normal snowmelt with some basins losing half or more of this winter's snowpack before April 1. Despite decent soil moisture the snowmelt did not produce a meaningful streamflow response. At this point the snow that is left is isolated to small islands on the highest ground. Streamflow forecasts have dropped significantly and almost all are below, to well below, the lowest observed amounts on record.

SNOWPACK

The lowest snow in over a century was measured at three out of four snow courses with data back to 1913 located in the Truckee and Lake Tahoe basins. Across Nevada and the eastern Sierra over 60 stations with at least 20 years of data set new record low snow water measurements on April 1; most by a large margin creating a new definition of what a dry winter can look like. A total of 86 of 126 snow measuring sites across Nevada and the eastern Sierra had no snow on April 1, just bare ground. Of these, 23 sites were snow-free on April 1 for the first time based on measurement records that extend back between 25 to 102 years. Considering that most snow measuring sites are located in places where snow lingers the longest, these results indicate just how little snow covers the mountain landscape compared to other years. This report combines manual snow course measurements and automated SNOTEL measurements when reporting first of month snowpack percentages. Basin-wide snowpack percentages in the eastern Sierra range from the Carson Basin with 3% of median, to the Lake Tahoe basin with 10%, the Truckee Basin with 13% and the Walker Basin with 18%. Elsewhere snow is 16-29% of median in the Northern Great Basin, Upper and Lower Humboldt basins, Owyhee Basin and Eastern Nevada, and 45-49% of median in the Snake Basin and Clover Valley - Franklin River Basin.

PRECIPITATION

The Pacific-Northwest is experiencing a snow-drought this winter having had near average precipitation which came in the form of rain instead of snow. Nevada's situation continues to be more in keeping with the strict definition of the word "drought", that being a lack of all kinds of precipitation. January was record dry in the Sierra and one of a handful of the driest years across the rest of northern Nevada. March followed suit, with 12% of average monthly precipitation in the Sierra and 30-40% across most of northern Nevada. Most SNOTEL sites in the Sierra recorded the driest or second driest March on record this year; same was true at sites in the Northern Great Basin, the Upper and Lower Humboldt basins, as well as, the Nevada headwaters to the Owyhee, Bruneau, and Salmon Falls basins. As these dry months stack up, the majority of Sierra SNOTEL sites from the Truckee to the Walker basins are setting new record low water year to date precipitation records compared with data back to about 1980. Water year precipitation since the beginning of October is only about half normal

in the Sierra and also in Eastern Nevada. Water year to date precipitation is 66-84% in other northern Nevada basins. Since October 2011, SNOTEL sites in the Sierra have missed up to a year and a half of the average annual precipitation amount. At the Squaw Valley GC SNOTEL, in the Truckee Basin, that equals nearly 7 feet of missed precipitation. During that same time period missed precipitation is equivalent to half an average year of precipitation in Eastern Nevada, and three-quarters of a year in the Humboldt basin.

SOIL MOISTURE

Soil moisture is above normal in basins where snow melt is still occurring. Unfortunately soil moisture may not have a significant impact on runoff this year simply due to the fact that there just isn't much snow to contribute to stream flow.

RESERVOIRS

April 1 storage is less than last year at this time in most reservoirs across the region. Lake Tahoe's water surface elevation dropped slightly in March as evaporation outpaced snowmelt. With minimal snow left in the mountains it is unlikely that Lake Tahoe will reach its natural rim this year without help from spring storms. Storage downstream in the Truckee River reservoirs is 28% of capacity, compared with 45% last year. Lahontan Reservoir storage is 20% of capacity, compared with 32% last year. Rye Patch storage is 5% of capacity, similar to last year.

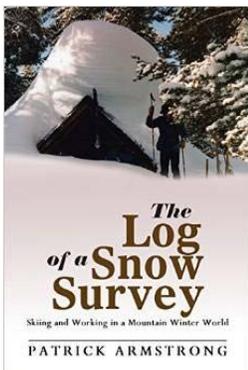
STREAMFLOW FORECASTS

Streamflow forecasts percentages for the April-July period dropped in March. Most forecasts predict record low streamflow volumes this spring and summer. Statewide streamflow forecasts range from 2% to 45% of average for the April-July period. Most forecasts are less than 20%. The Carson River at Fort Churchill and the Humboldt River near Imlay are both forecast at 3% while the Truckee River at Farad is forecast at 19%.

UPCOMING EVENTS AND NEWS

Western Snow Conference, April 20-23, 2015, Grass Valley, CA, www.westernsnowconference.org/

The Conference begins Monday with a short course on "LIDAR Basics, Applications, and Use in Snow Hydrology and Field Studies." Tuesday and Wednesday will include formal paper and poster presentations on topics including: climate variability, climate change impacts on snow and runoff, water management, water supply forecasting, and modeling and climatology of snow. The Wednesday evening banquet features Patrick Armstrong discussing his book (see below). The technical tour on Thursday will visit hydrologic and gold mining points of interest around Grass Valley.



Recommended Reading:

[The Log of a Snow Survey – Skiing and Working in a Mountain Winter World,](#)

Patrick Armstrong. Abbot Press, 2014.

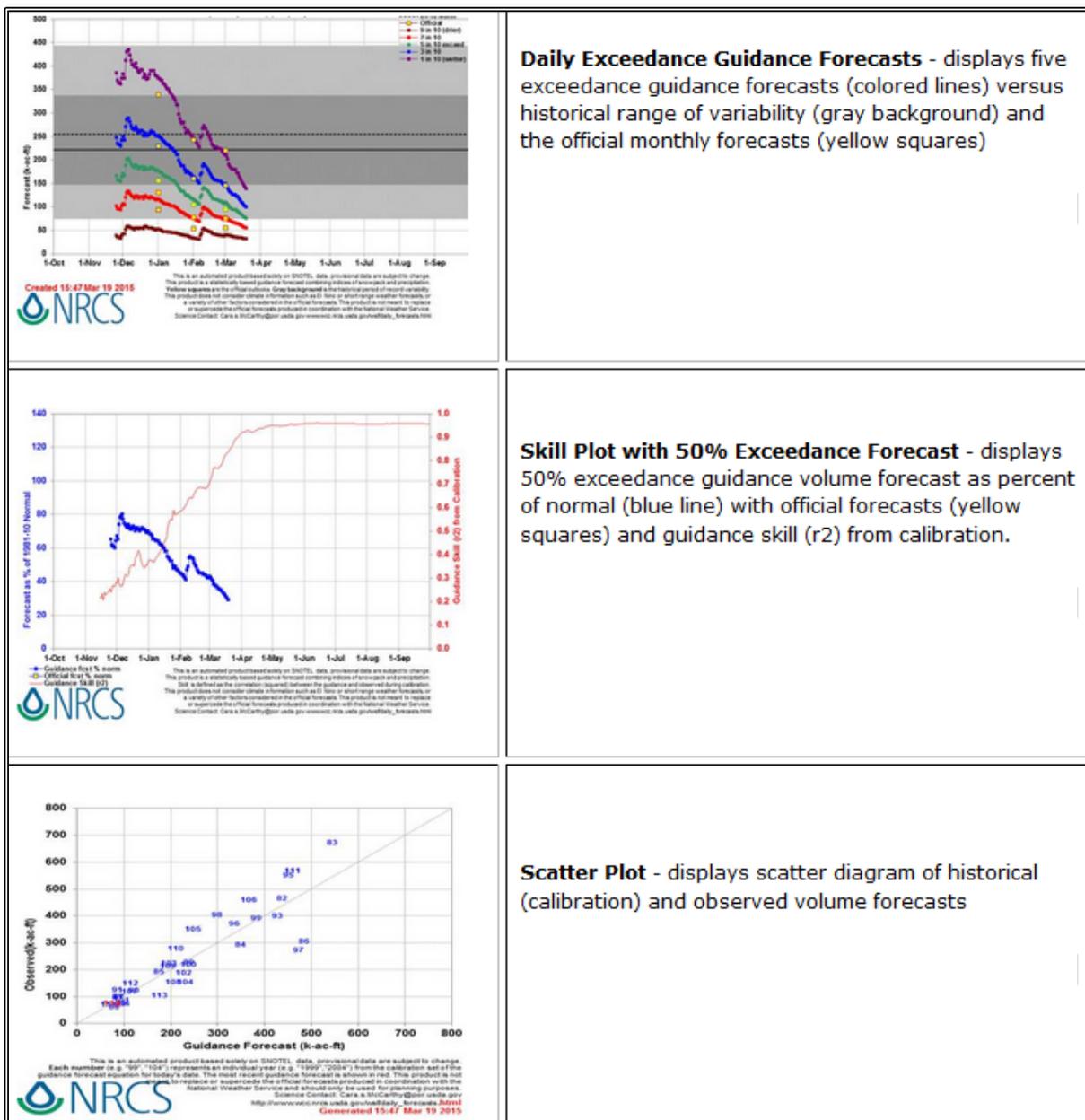
Using an actual account of a snow survey trip Armstrong draws on his 40-plus years of experience to cover the day-to-day joys and dangers of being a snow surveyor in the Sierra Nevada Mountains.

SNOW SURVEY PRODUCT HIGHLIGHT

This section highlights products that are linked from the Nevada Snow Program website: www.nv.nrcs.usda.gov/snow/. This month [Daily Water Supply Forecasts](#) are the highlight.

Daily Water Supply Forecasts have recently been added in Nevada. They are useful to track how recent weather events, such as wet or dry periods, change streamflow forecasts between official first of month and mid-month forecasts. Three graphical products are available (shown below) for 30 different streamflow forecast points in Nevada and the Eastern Sierra. The numerical output data for each forecast point is also available in a spreadsheet. The Daily Water Supply Forecast products are a completely automated set of products based on provisional SNOTEL snow water and precipitation data. These products do not consider climate information such as El Nino/La Nina, or monthly snow course data or other factors that may be considered in the official forecasts.

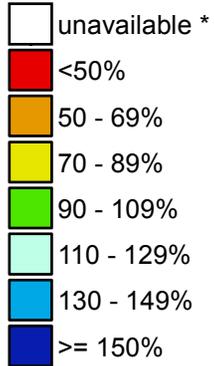
The official forecasts, as well as their input data, undergo more rigorous human review before publication when compared to daily forecasts. The daily products are not meant to replace or supersede the official forecasts produced in coordination with the National Weather Service. Official first of month forecasts are displayed on these daily products for reference purposes. To learn more about these daily products please view the [Daily Forecast Technical Note](#).



Nevada/California SNOTEL Current Snow Water Equivalent (SWE) % of Normal

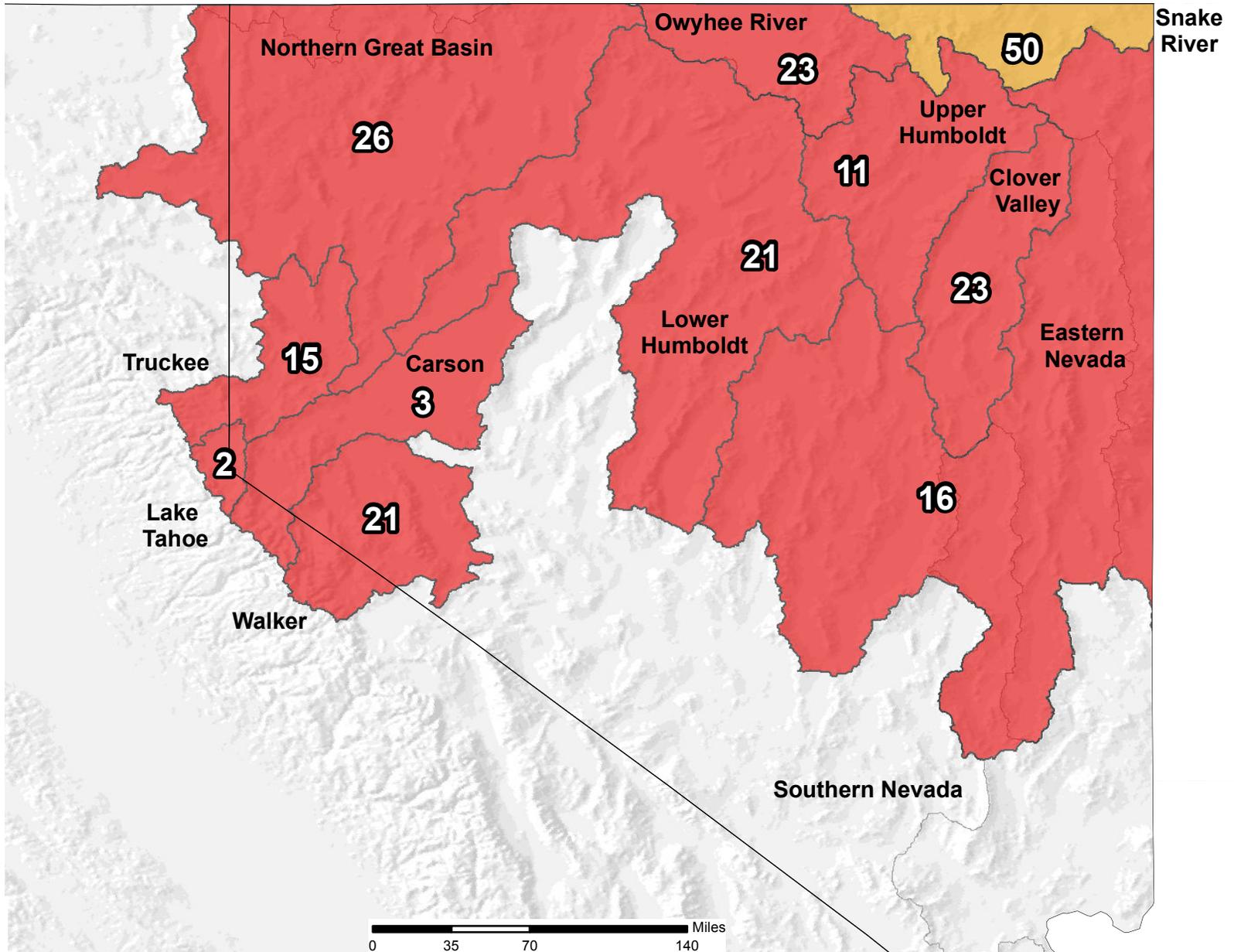
Apr 07, 2015

Current Snow Water Equivalent Basin-wide Percent of 1981-2010 Median



* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional data subject to revision



The current snow water equivalent percent of normal represents the snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
 USDA/NRCS National Water and Climate Center
 Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

Nevada/California SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

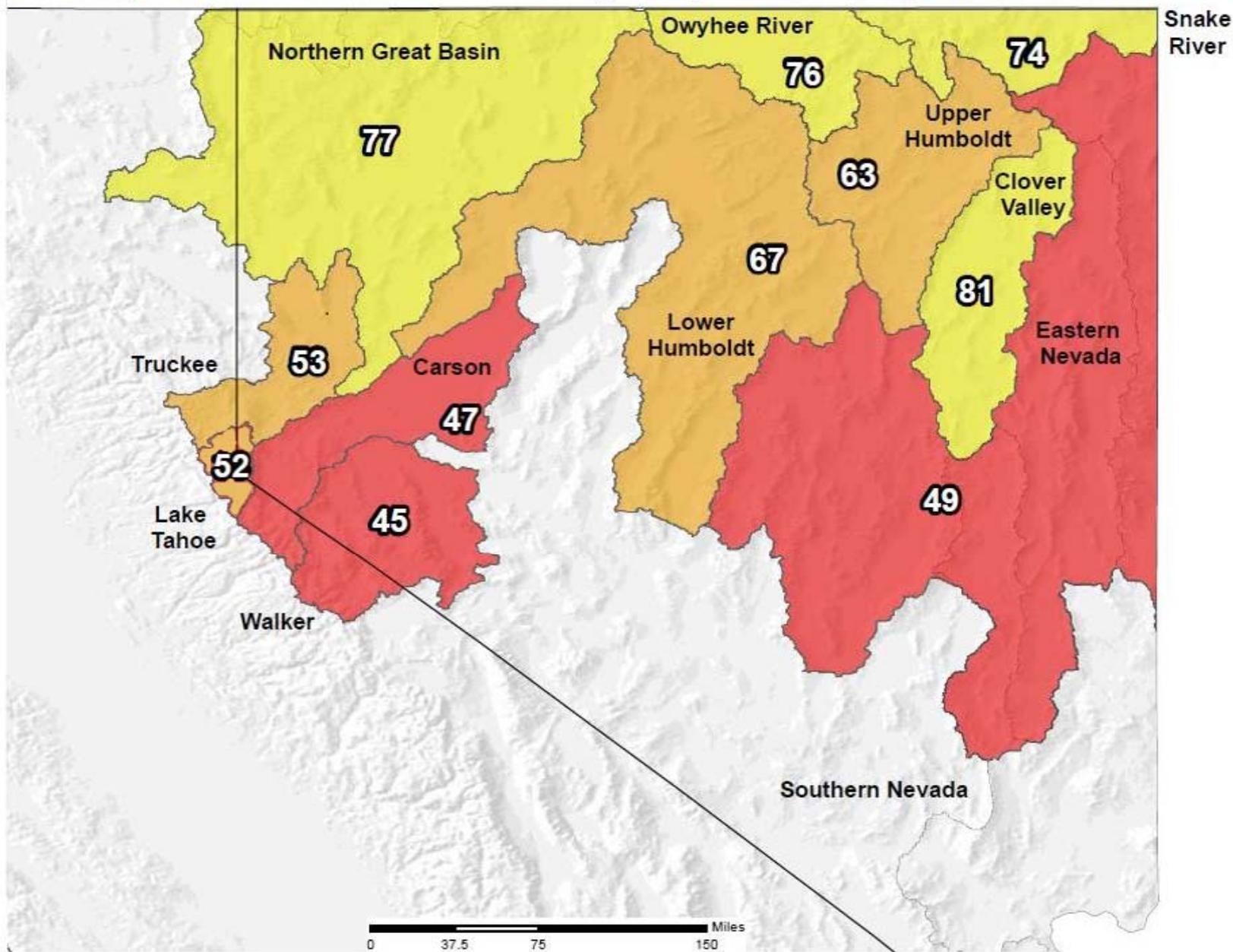
Apr 07, 2015

Water Year (Oct 1)
to Date Precipitation
Basin-wide Percent
of 1981-2010 Average



* Data unavailable
at time of posting
or measurement
is not representative
at this time of year

Provisional data
subject to revision



The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

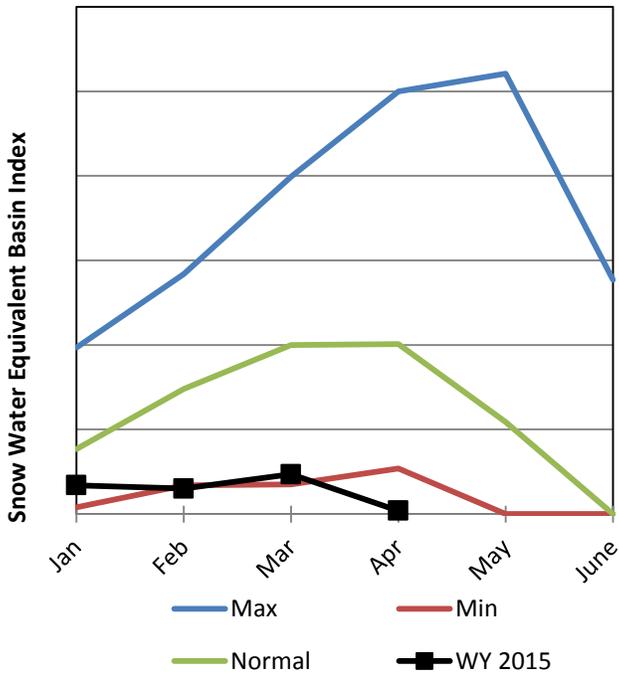
Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

Lake Tahoe Basin

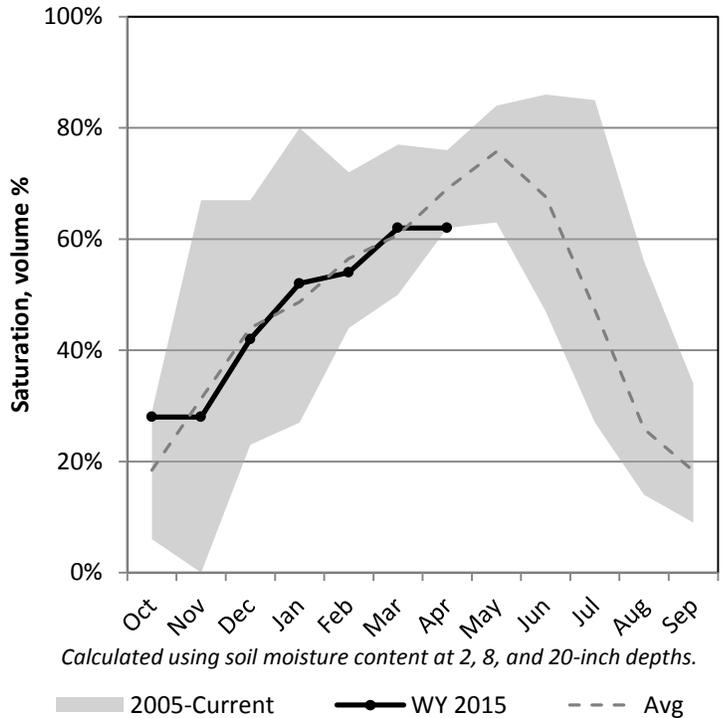
4/1/2015

Snowpack in the Lake Tahoe Basin is much below average at 10% of normal, compared to 45% last year. Precipitation in March was much below average at 13%, which brings the seasonal accumulation (Oct-Mar) to 52% of average. Soil moisture is at 62% compared to 62% last year. Lake Tahoe's water elevation is 6222.81 ft, which is 0.19 feet below the lake's natural rim and equals a storage deficit of about 23,000 acre-feet. Last year the elevation was 6224.27 ft and the useable storage equaled 152,000 acre-feet. Lake Tahoe is forecast to rise 0.20 feet from April to its high elevation.

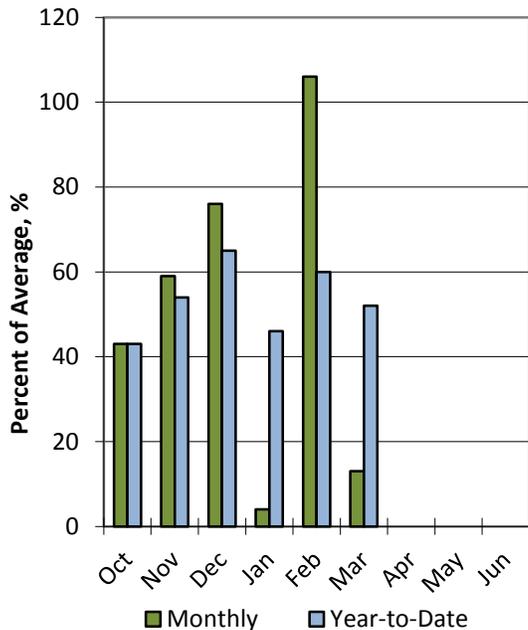
Snowpack



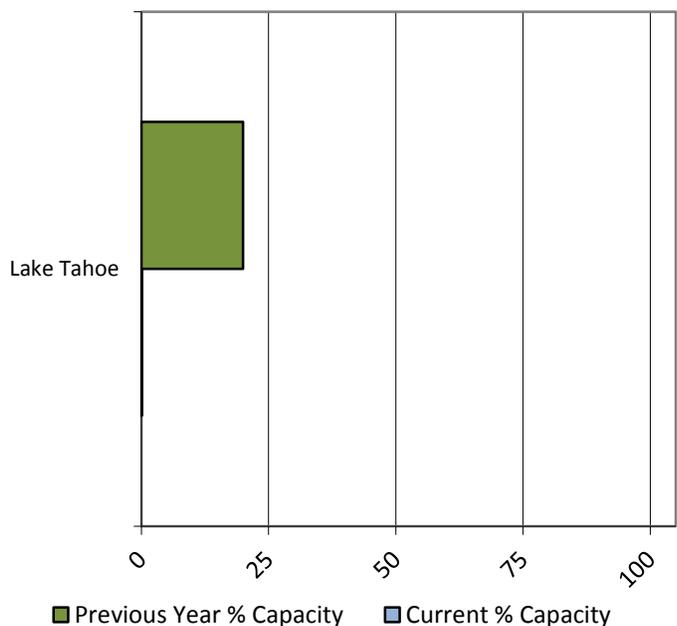
Soil Moisture



Precipitation



Reservoir Storage



Lake Tahoe Streamflow Forecasts - April 1, 2015

Lake Tahoe	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Marlette Lake Inflow	APR-JUL	-686	-325	-80	-9%	165	526	911
	MAY-JUL	-891	-539	-300	-48%	-61	291	630
Lake Tahoe Rise Gates Closed ¹	APR-HIGH	0.04	0.1	0.2	15%	0.42	0.6	1.31
	MAY-HIGH	0	0.022	0.1	9%	0.28	0.68	1.08

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

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

3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Tahoe	0.0	150.6	312.8	744.6
Basin-wide Total		150.6	312.8	744.6
# of reservoirs	1	1	1	1

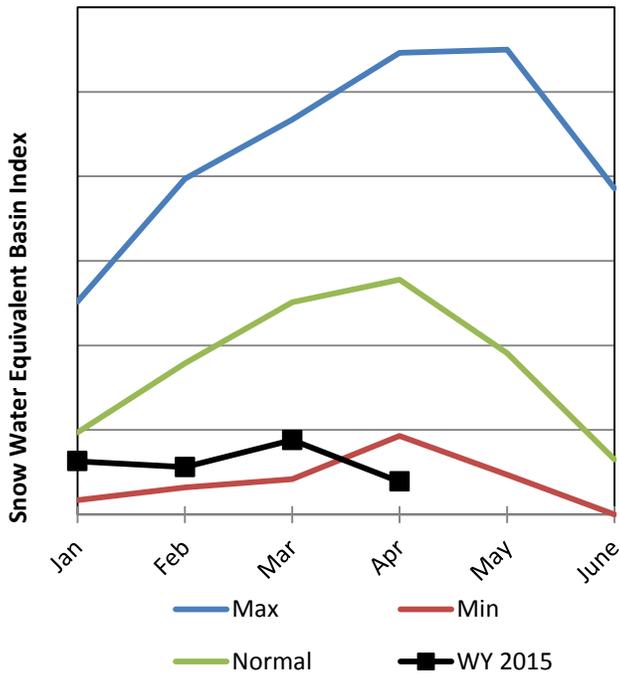
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Lake Tahoe Basin	16	10%	45%

Truckee River Basin

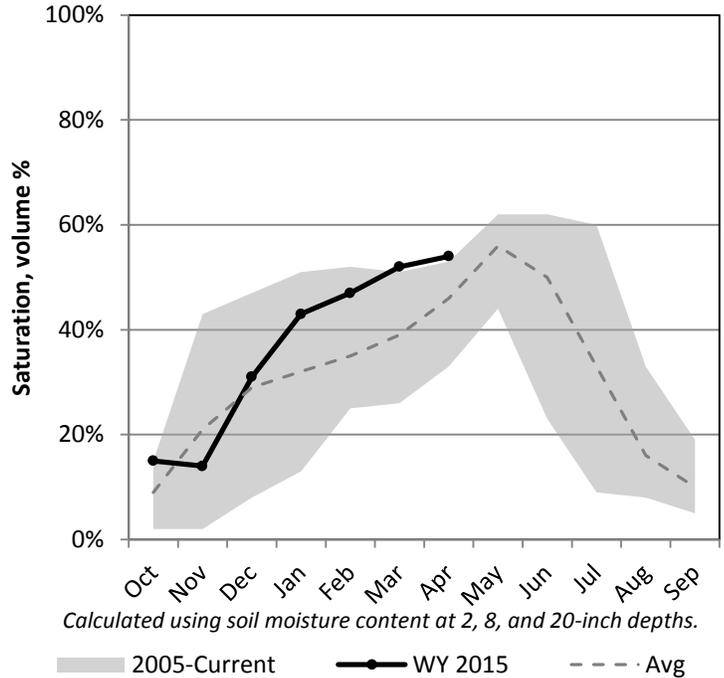
4/1/2015

Snowpack in the Truckee River Basin is much below average at 13% of normal, compared to 31% last year. Precipitation in March was much below average at 12%, which brings the seasonal accumulation (Oct-Mar) to 53% of average. Soil moisture is at 54% compared to 46% last year. Reservoir storage is at 28% of capacity, compared to 45% last year. Forecast streamflow volumes range from 2% to 19% of average.

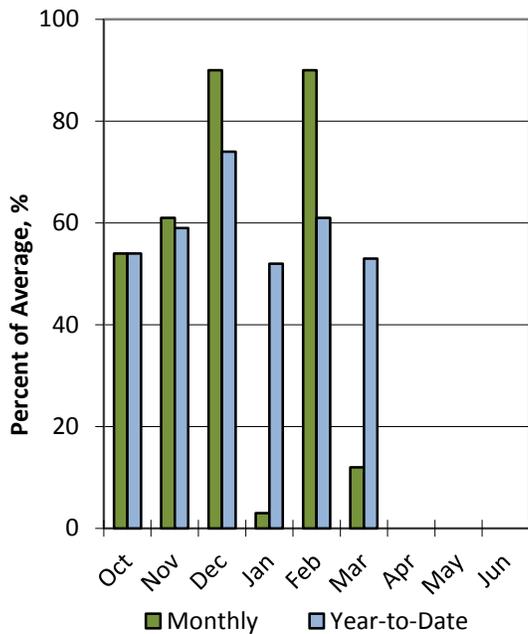
Snowpack



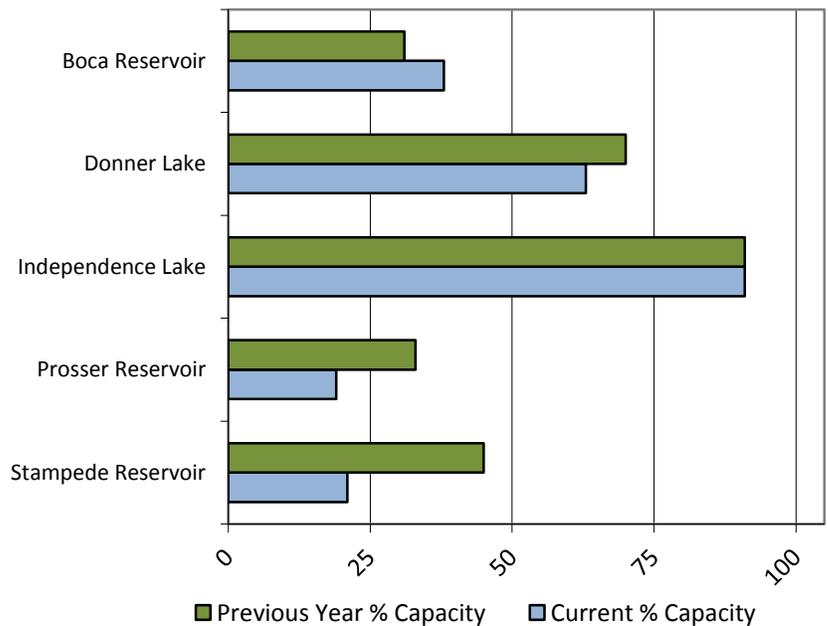
Soil Moisture



Precipitation



Reservoir Storage



Truckee River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Truckee River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Sagehen Ck nr Truckee	APR-JUL	0.63	0.73	0.8	14%	0.88	1.02	5.6
	MAY-JUL	0.28	0.32	0.35	8%	0.38	0.43	4.2
L Truckee R ab Boca Reservoir	APR-JUL	6	10.6	15	18%	24	37	84
	MAY-JUL	0	1.89	8	13%	19.9	37	63
Truckee R at Farad	APR-JUL	12	32	49	19%	75	110	255
	MAY-JUL	1.83	5.5	22	12%	48	86	183
Steamboat Ck at Steamboat	APR-JUL	0	0.03	0.14	2%	0.41	1.22	7.9
	MAY-JUL	0	0.02	0.1	2%	0.27	0.76	6.1
Galena Ck at Galena Ck State Pk	APR-JUL	0	0.22	0.7	16%	1.18	1.88	4.37
	MAY-JUL	0	0.08	0.6	16%	1.12	1.9	3.65
Pyramid Lake Elevation Change ¹	LOW-HIGH	-4.2	-2.2	-1.3	-76%	-0.41	1.56	1.7

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Boca Reservoir	15.6	12.8	22.1	40.9
Prosser Reservoir	5.4	9.5	10.2	28.6
Basin-wide Total	21.0	22.3	32.3	69.5
# of reservoirs	2	2	2	2

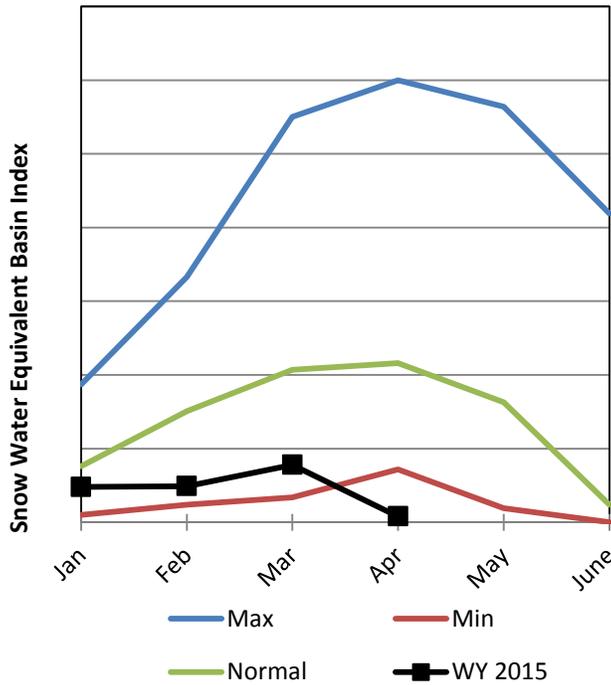
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Truckee River Basin	17	13%	31%
Little Truckee River	5	16%	34%
Sage Hen Creek	3	23%	33%
Galena Creek	2	38%	47%
Steamboat Drainage	3	37%	45%
Pyramid Lake	32	10%	36%

Carson River Basin

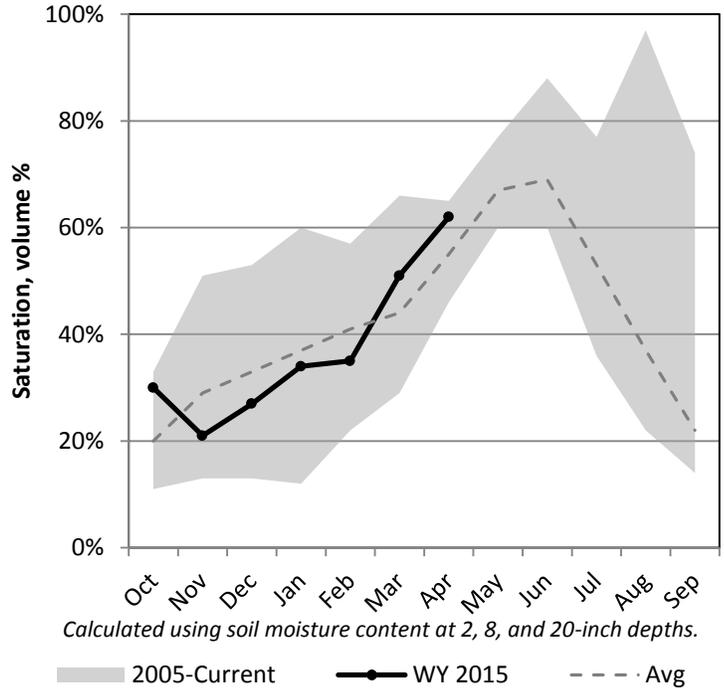
4/1/2015

Snowpack in the Carson River Basin is much below average at 3% of normal, compared to 56% last year. Precipitation in March was much below average at 12%, which brings the seasonal accumulation (Oct-Mar) to 47% of average. Soil moisture is at 62% compared to 46% last year. Storage in Lahontan Reservoir is 20% of capacity, compared to 32% last year. Forecast streamflow volumes range from -9% to 18% of average.

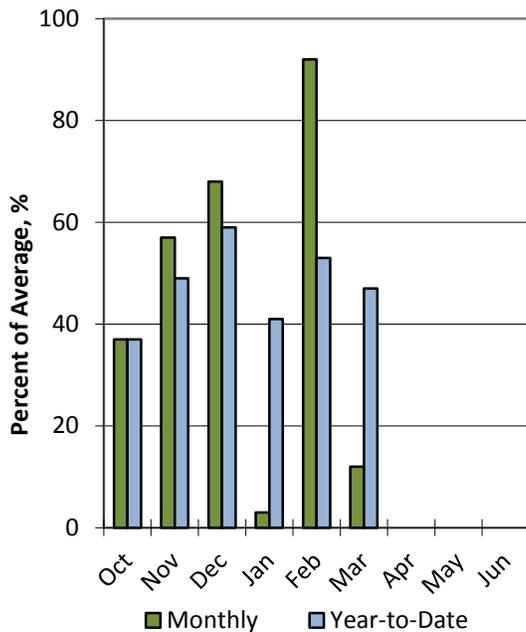
Snowpack



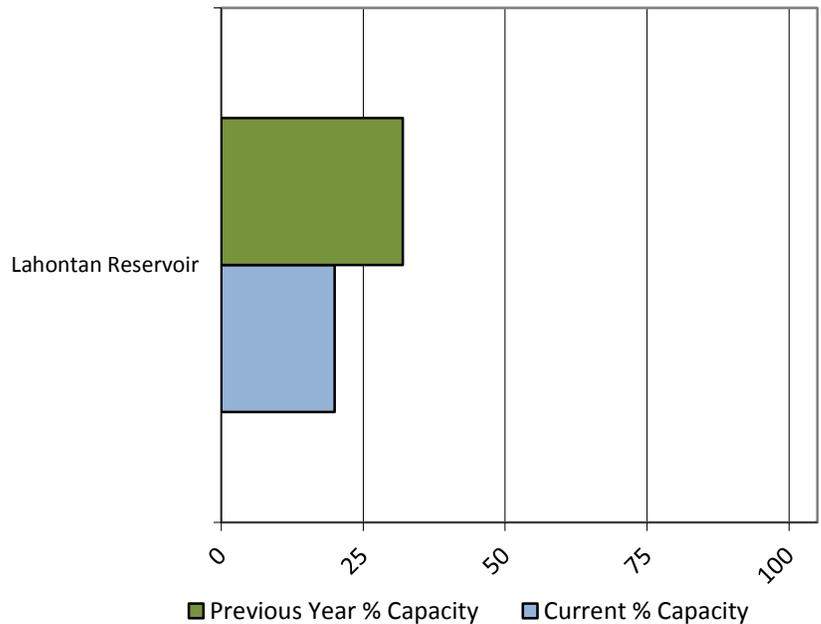
Soil Moisture



Precipitation



Reservoir Storage



Carson River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Carson River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
EF Carson R nr Gardnerville	APR-JUL	3.7	14	34	18%	54	83	186
	MAY-JUL	1.51	4.5	20	13%	39	68	151
	200 cfs	19 May	29 May	05 Jun		12 Jun	22 Jun	25 Jul
	500 cfs	26 Apr	06 May	12 May		18 May	28 May	01 Jul
WF Carson R nr Woodfords	APR-JUL	0	2.1	9	17%	15.9	26	54
	MAY-JUL	0.42	1.26	5	12%	13.3	26	42
Carson R nr Carson City	APR-JUL	6	10.2	14	8%	18.6	27	179
	MAY-JUL	2.6	5.8	9	6%	13.2	22	144
Marlette Lake Inflow	APR-JUL	-686	-325	-80	-9%	165	526	911
	MAY-JUL	-891	-539	-300	-48%	-61	291	630
King Canyon Ck nr Carson City	APR-JUL	0	0.008	0.04	11%	0.133	0.28	0.38
	MAY-JUL	0	0.005	0.02	7%	0.105	0.192	0.27
Carson R at Ft Churchill	APR-JUL	0.8	2	5	3%	15	24	171
	MAY-JUL	0.12	1.03	2.5	2%	5	10.9	138
Ash Canyon Ck nr Carson City	APR-JUL	0	0.02	0.2	18%	0.41	0.71	1.12
	MAY-JUL	0	0.009	0.04	4%	0.2	0.43	0.91

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lahontan Reservoir	57.9	95.8	198.8	295.1
Basin-wide Total	57.9	95.8	198.8	295.1
# of reservoirs	1	1	1	1

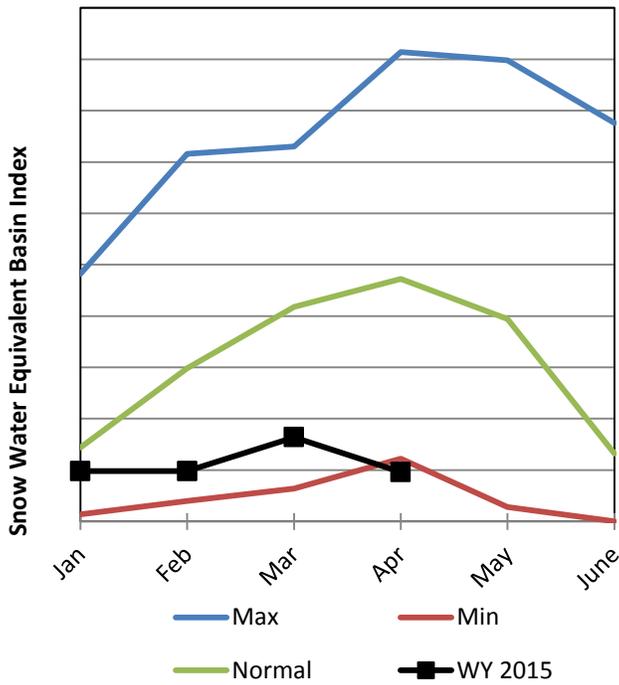
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Carson River Basin	9	3%	56%
E.F. Carson River	4	0%	54%
W.F. Carson River	9	3%	56%

Walker River Basin

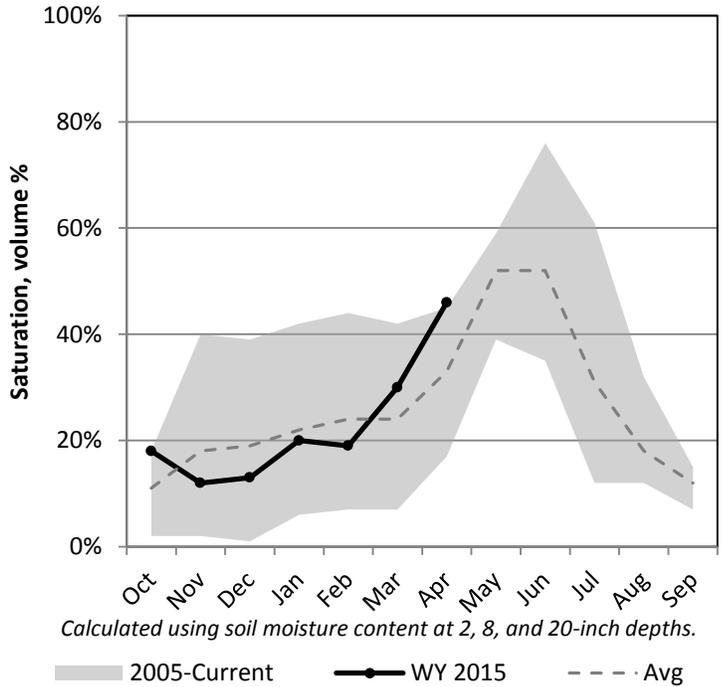
4/1/2015

Snowpack in the Walker River Basin is much below average at 18% of normal, compared to 44% last year. Precipitation in March was much below average at 12%, which brings the seasonal accumulation (Oct-Mar) to 45% of average. Soil moisture is at 46% compared to 17% last year. Combined reservoir storage is at 16% of capacity, compared to 18% last year. Forecast streamflow volumes range from 12% to 15% of average.

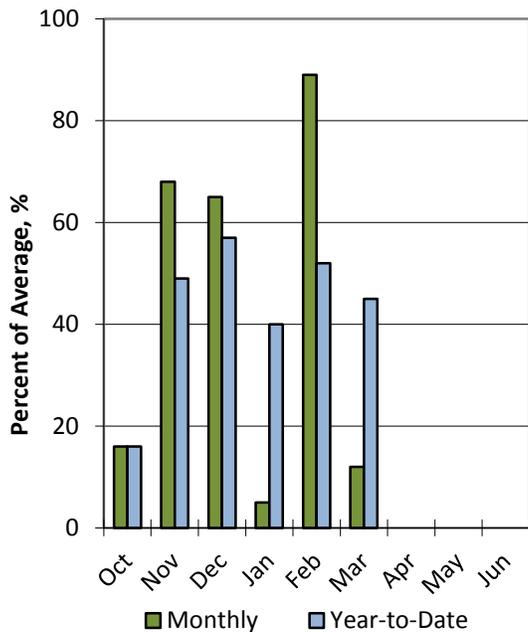
Snowpack



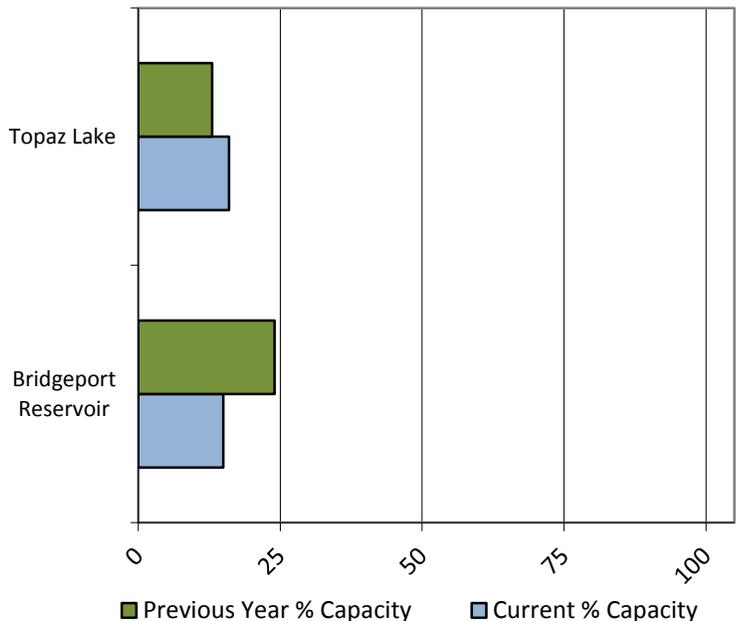
Soil Moisture



Precipitation



Reservoir Storage



Walker River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Walker River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
E Walker R nr Bridgeport	APR-AUG	0.67	2	8	12%	24	46	67
	MAY-AUG	0.59	1.77	6	10%	18.4	37	59
W Walker R bl L Walker nr Coalville	APR-JUL	0	7.5	24	15%	40	65	162
	MAY-JUL	0	5.1	21	15%	38	62	142
W Walker R nr Coalville	APR-JUL	15.7	21	24	15%	27	32	163
	MAY-JUL	0	2.9	21	15%	59	114	143
Walker Lake Elevation Change ¹	LOW-HIGH	-5.9	-3.5	-2.4	-170%	-1.26	1.17	1.41

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
- 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
- 3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bridgeport Reservoir	6.5	10.2	27.2	42.5
Topaz Lake	9.6	7.9	32.1	59.4
Basin-wide Total	16.1	18.0	59.3	101.9
# of reservoirs	2	2	2	2

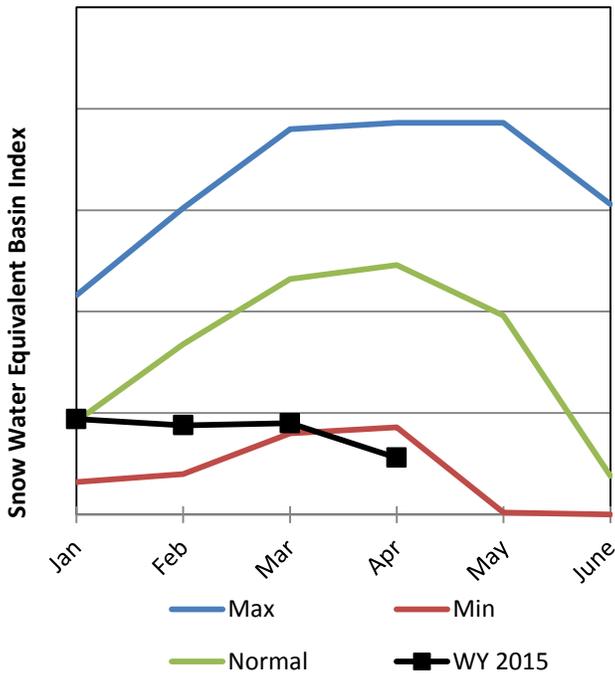
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Walker River Basin	8	18%	44%
E. Walker Rv. Nr Bridgeport	4	4%	37%
W. Walker Rv. Nr Coleville	5	22%	48%

Northern Great Basin

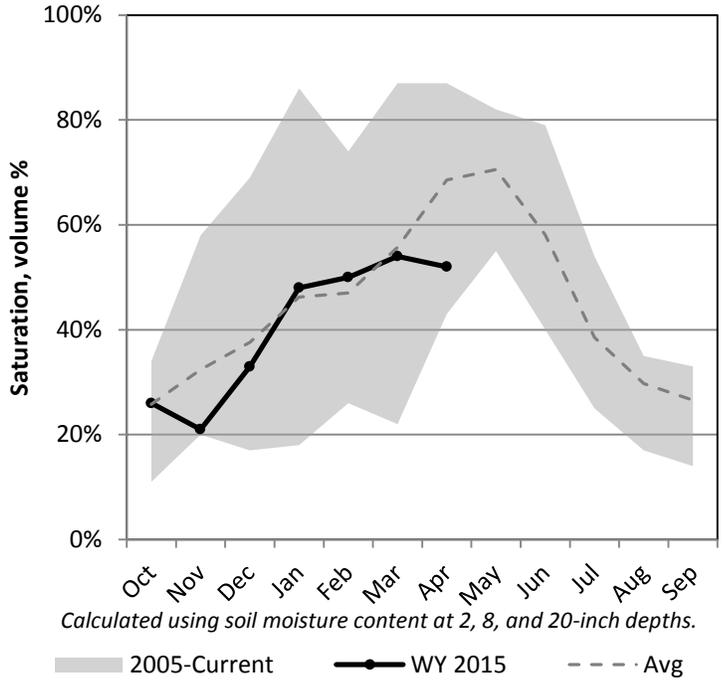
4/1/2015

Snowpack in the Northern Great Basin is much below average at 23% of normal, compared to 54% last year. Precipitation in March was much below average at 39%, which brings the seasonal accumulation (Oct-Mar) to 78% of average. Soil moisture is at 52% compared to 36% last year. Forecast streamflow volumes range from 3% to 29% of average.

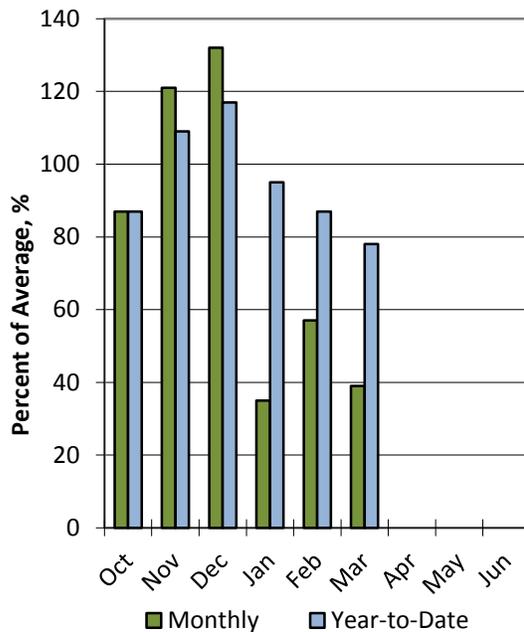
Snowpack



Soil Moisture



Precipitation



Northern Great Basin Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Northern Great Basin	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Eagle Ck nr Eagleville	APR-JUL	0.043	0.129	0.8	19%	1.73	3.1	4.3
Bidwell Ck nr Fort Bidwell	APR-JUL	0	0.24	1	8%	2.4	4.5	12
McDermitt Ck nr McDermitt	MAR-JUN	0	0.175	0.5	3%	4.6	10.7	17.5
	APR-JUL	0	0.14	0.4	3%	4.1	9.4	14
Davis Ck	APR-JUL	1304	1732	2100	29%	2547	3383	7233
	APR-SEP	1535	2003	2400	30%	2875	3752	7991

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- 3) Median value used in place of average

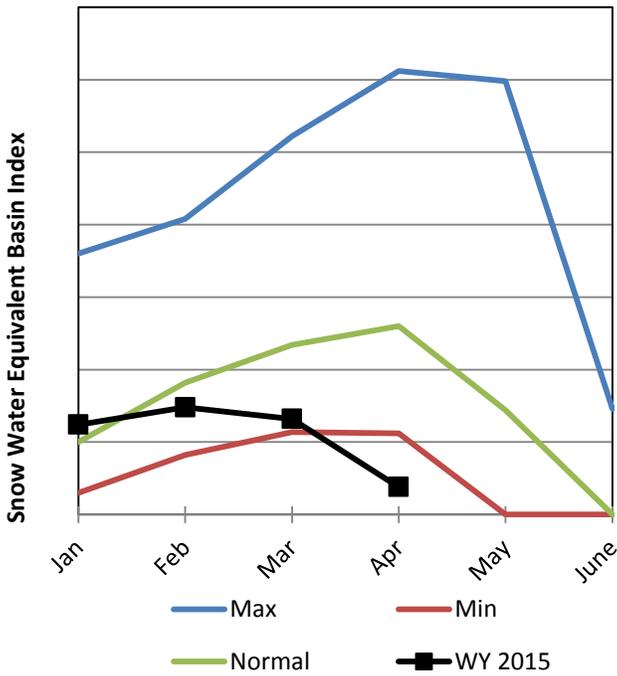
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
N Great Basin	4	23%	54%
Quinn River	1	0%	42%
McDermitt Creek	1	0%	42%

Upper Humboldt River Basin

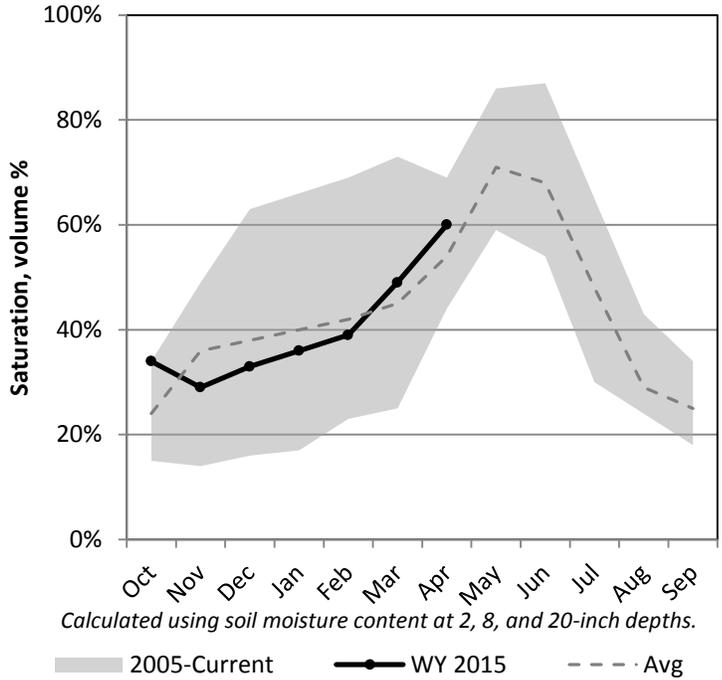
4/1/2015

Snowpack in the Upper Humboldt River Basin is much below average at 23% of normal, compared to 95% last year. Precipitation in March was much below average at 29%, which brings the seasonal accumulation (Oct-Mar) to 66% of average. Soil moisture is at 60% compared to 50% last year. Forecast streamflow volumes range from 3% to 34% of average.

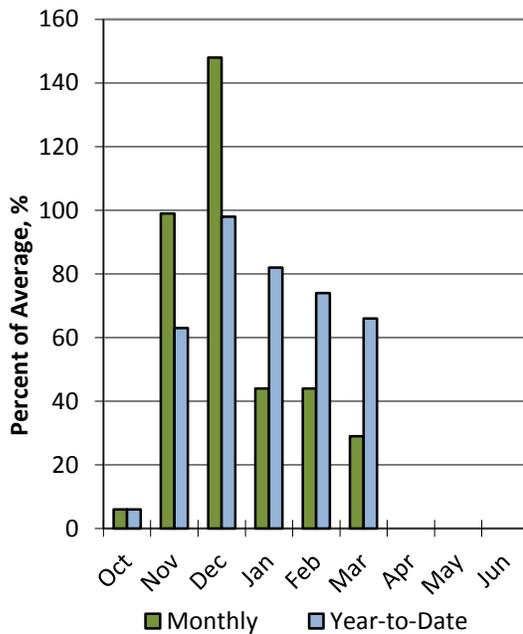
Snowpack



Soil Moisture



Precipitation



Upper Humboldt River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Upper Humboldt River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Marys R nr Deeth	APR-JUL	0	1.4	7	19%	14.6	24	36
	MAY-JUL	0.26	0.78	3	12%	10.3	21	26
Lamoille Ck nr Lamoille	APR-JUL	0.58	5	10	34%	15	22	29
	MAY-JUL	0.27	3.9	9	33%	14.1	22	27
NF Humboldt R at Devils Gate	APR-JUL	0	0.68	3	9%	8.6	16.8	34
	MAY-JUL	0	0.22	1.4	6%	7.2	15.8	22
Humboldt R nr Elko	APR-JUL	0	1.54	5	3%	41	93	154
	MAY-JUL	0	1.19	3.5	3%	37	85	119
SF Humboldt R at Dixie	APR-JUL	0	1.98	11	17%	27	51	66
	MAY-JUL	0	0.57	7	12%	23	46	57
Humboldt R nr Carlin	APR-JUL	0	4.8	29	12%	62	111	238
	MAY-JUL	1.89	3.8	18	10%	49	95	189
Humboldt R at Palisades	APR-JUL	2.2	6.8	41	18%	81	141	225
	MAY-JUL	1.71	5.1	28	16%	66	122	171

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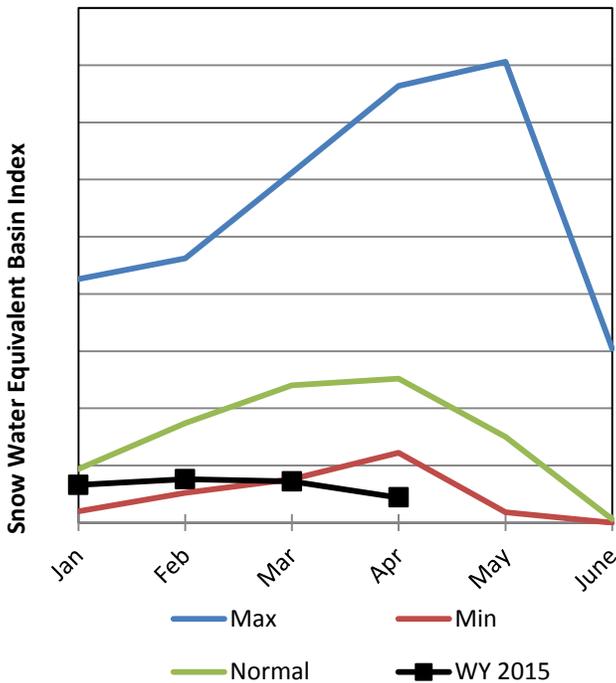
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Upper Humboldt R ab Palisades	18	23%	95%
Lamoille Creek	3	30%	102%
S. Fork Humboldt	5	18%	107%
Mary's River	1	18%	67%
N. Fork Humboldt	2	0%	15%

Lower Humboldt River Basin

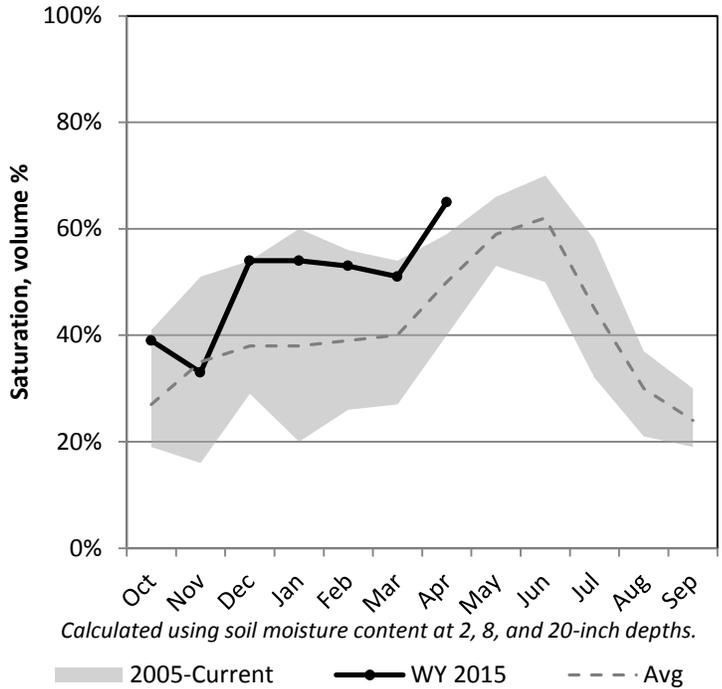
4/1/2015

Snowpack in the Lower Humboldt River Basin is much below average at 18% of normal, compared to 57% last year. Precipitation in March was much below average at 31%, which brings the seasonal accumulation (Oct-Mar) to 70% of average. Soil moisture is at 65% compared to 54% last year. Storage in Rye Patch Reservoir is 5% of capacity, compared to 5% last year. Forecast streamflow volumes range from 3% to 17% of average.

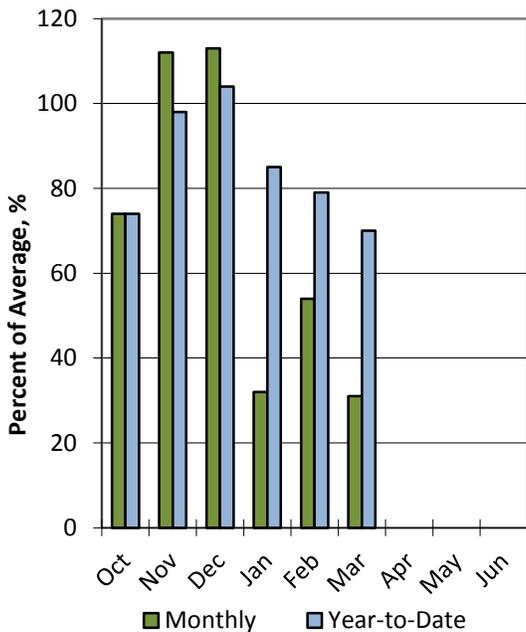
Snowpack



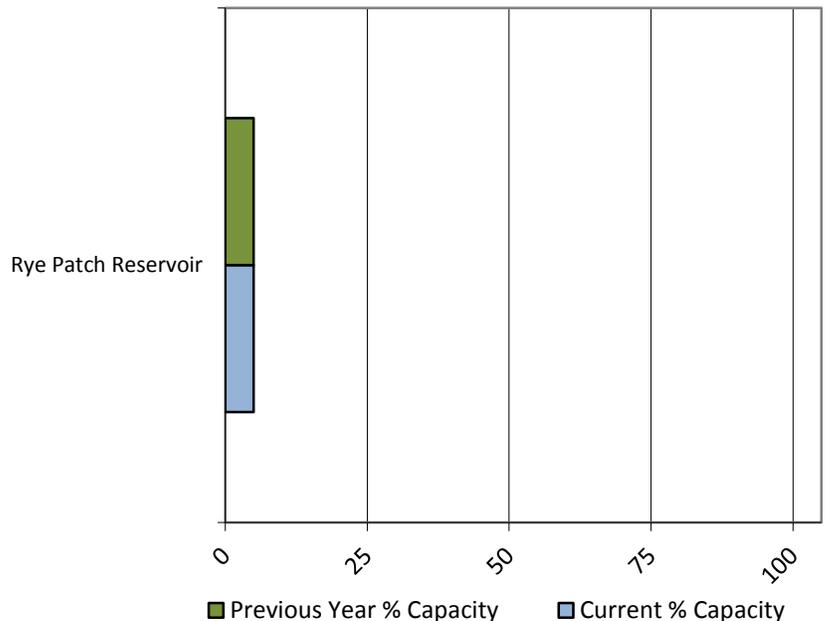
Soil Moisture



Precipitation



Reservoir Storage



Lower Humboldt River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Lower Humboldt River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rock Ck nr Battle Mtn	APR-JUL	0.182	0.36	2.1	12%	5	9.2	18.2
	MAY-JUL	0	0.196	1.1	11%	3.5	7	9.8
Humboldt R at Comus	APR-JUL	0	2.2	6	3%	45	101	215
	MAY-JUL	0	1.56	3	2%	39	93	156
L Humboldt R nr Paradise	APR-JUL	0	0.097	1.1	11%	3.8	8.1	9.7
	MAY-JUL	0	0.076	0.8	11%	2.5	6.2	7.6
Martin Ck nr Paradise	APR-JUL	0	0.35	3	17%	8	15.4	17.5
	MAY-JUL	0.122	0.37	2	16%	6.3	13.6	12.2
Humboldt R nr Imlay	APR-JUL	0	1.88	6	3%	56	160	188
	MAY-JUL	0	1.41	3	2%	47	100	141

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- 3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Rye Patch Reservoir	9.7	9.2	87.6	194.3
Basin-wide Total	9.7	9.2	87.6	194.3
# of reservoirs	1	1	1	1

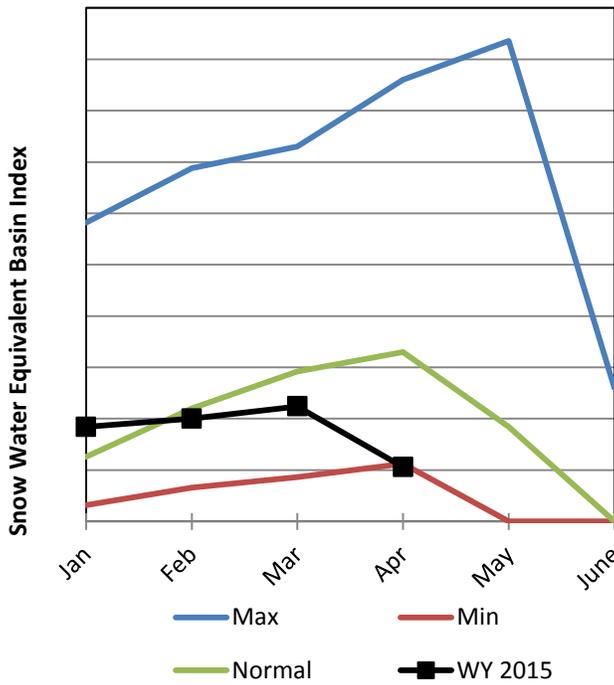
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Lower Humboldt River Basin	6	18%	57%
Little Humboldt River	4	13%	53%
Martin Creek	3	17%	51%
Reese River	3	16%	54%
Rock Creek	1		

Clover Valley & Franklin River Basin

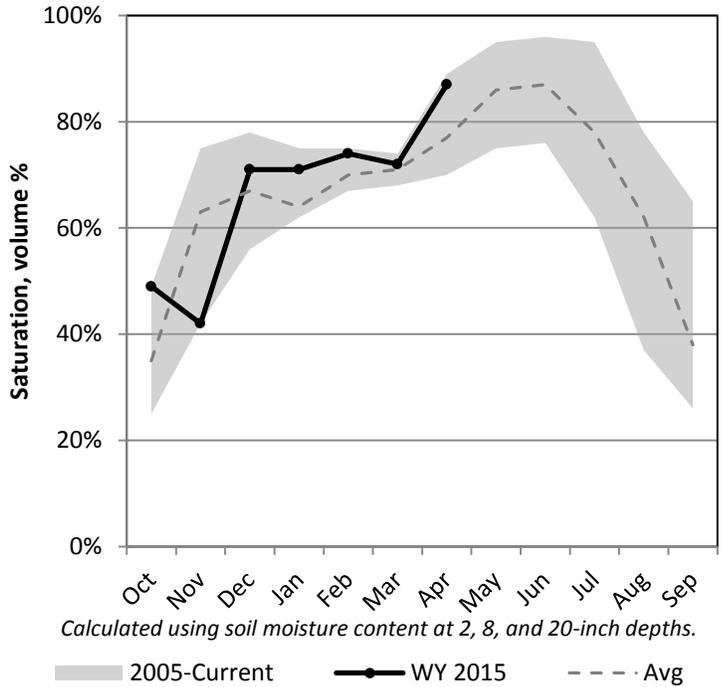
4/1/2015

Snowpack in the Clover Valley & Franklin River Basin is much below average at 45% of normal, compared to 100% last year. Precipitation in March was much below average at 53%, which brings the seasonal accumulation (Oct-Mar) to 84% of average. Soil moisture is at 87% compared to 76% last year. The forecast streamflow volume for the Franklin River is 29% of average.

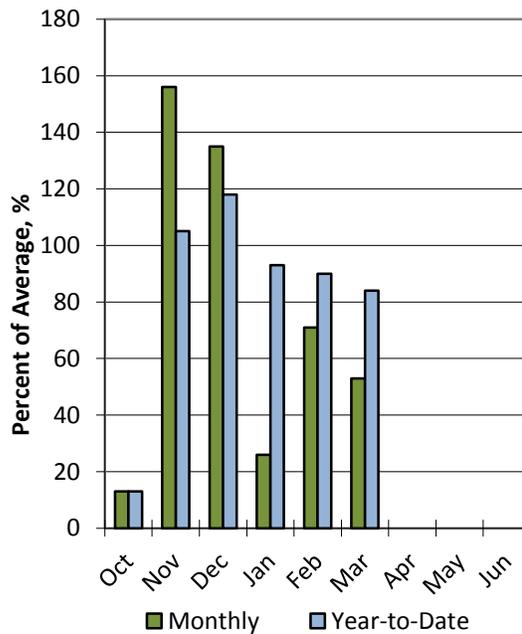
Snowpack



Soil Moisture



Precipitation



Clover Valley & Franklin River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Clover Valley & Franklin River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Franklin Ck nr Arthur	APR-JUL	0.21	1.28	2	29%	2.7	3.8	6.9

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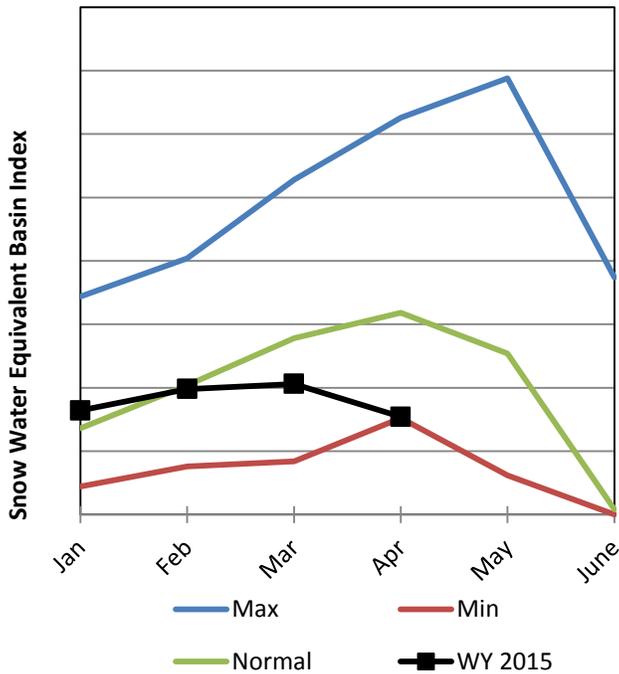
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Clover Valley and Franklin River	3	45%	100%
Franklin River	2	50%	97%
Clover Valley	1	32%	104%

Snake River Basin

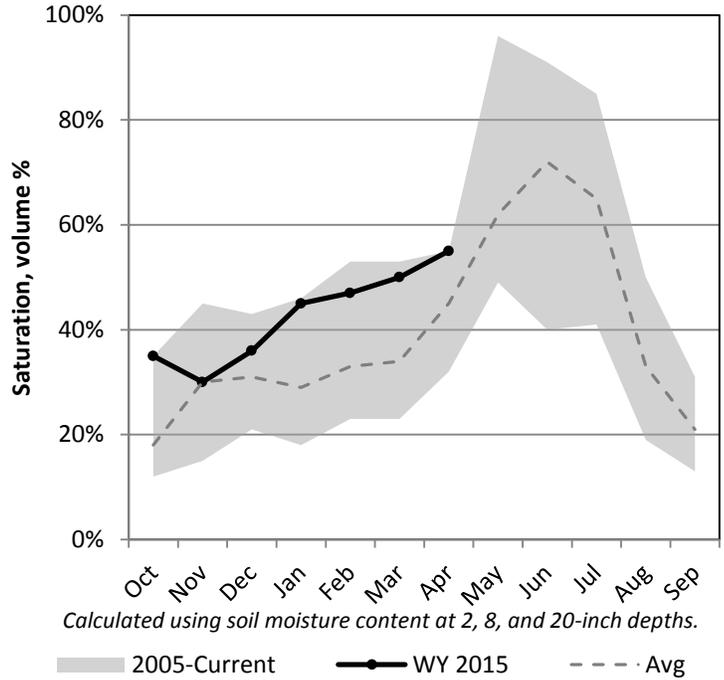
4/1/2015

Snowpack in the Snake River Basin is much below average at 49% of normal, compared to 74% last year. Precipitation in March was much below average at 41%, which brings the seasonal accumulation (Oct-Mar) to 75% of average. Soil moisture is at 55% compared to 35% last year. The forecast streamflow volume for Salmon Falls Creek is 36% of average.

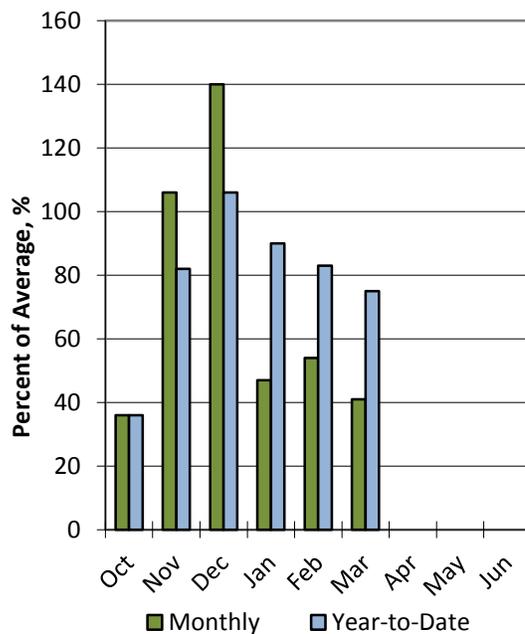
Snowpack



Soil Moisture



Precipitation



Snake River Basin Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Snake River Basin	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Salmon Falls Ck nr San Jacinto	APR-JUL	11.6	19	25	36%	32	43	70
	APR-SEP	13.6	21	28	38%	35	47	74

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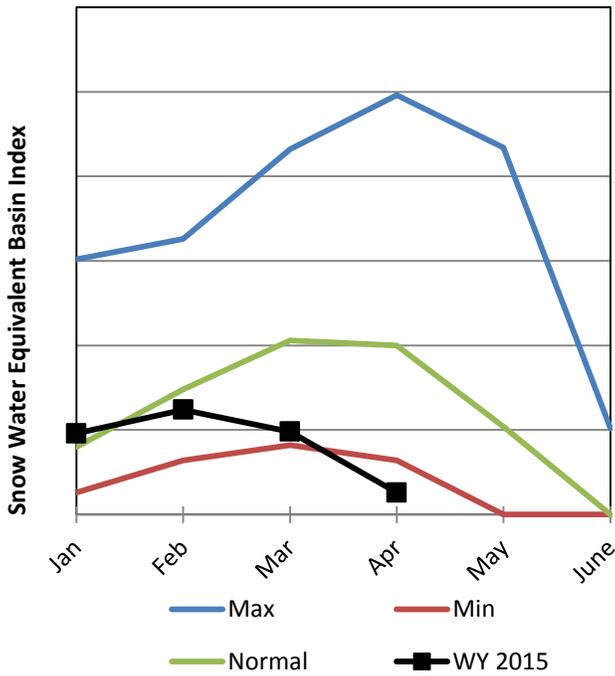
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Snake River Basin	3	49%	74%
Salmon Falls Creek	8	50%	78%

Owyhee River Basin

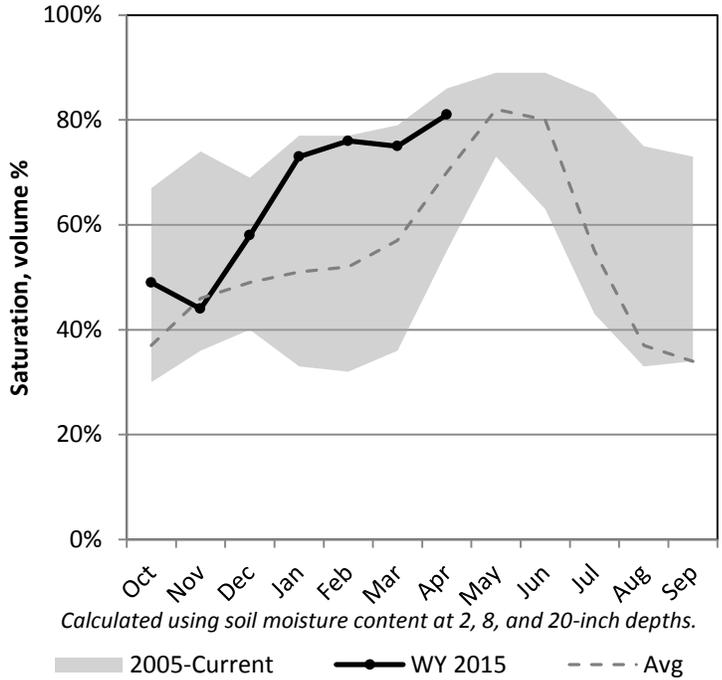
4/1/2015

Snowpack in the Owyhee River Basin is much below average at 19% of normal, compared to 52% last year. Precipitation in March was much below average at 41%, which brings the seasonal accumulation (Oct-Mar) to 78% of average. Soil moisture is at 81% compared to 67% last year. Storage in Wildhorse Reservoir is 20% of capacity, compared to 22% last year. The forecast streamflow volume for the Owyhee River near Gold Creek is 10% of average.

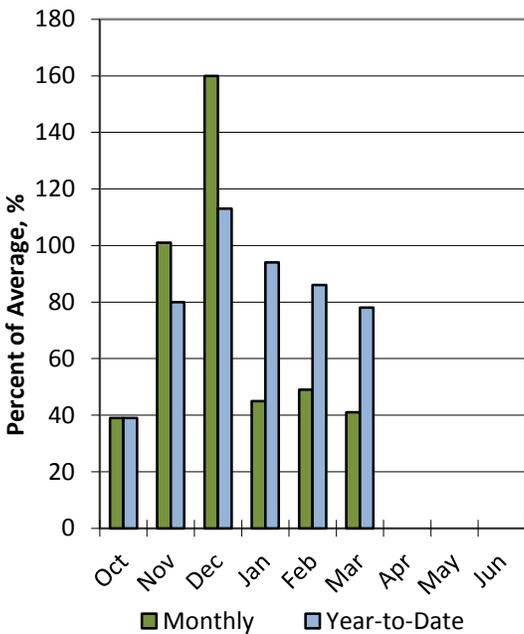
Snowpack



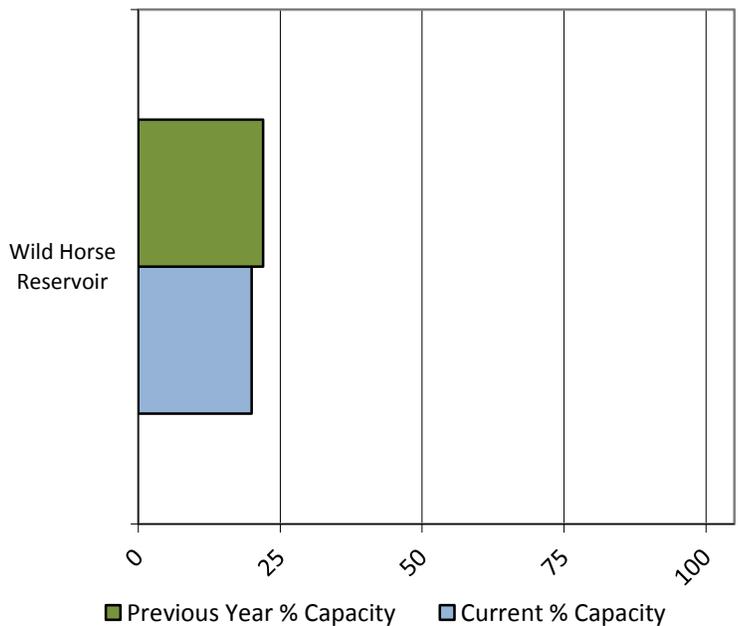
Soil Moisture



Precipitation



Reservoir Storage



Owyhee River Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Owyhee River	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Owyhee R nr Gold Ck ²	APR-JUL	0.02	0.69	2.1	10%	4.9	12	22

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- 3) Median value used in place of average

Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Wild Horse Reservoir	14.2	15.8	39.2	71.5
Basin-wide Total	14.2	15.8	39.2	71.5
# of reservoirs	1	1	1	1

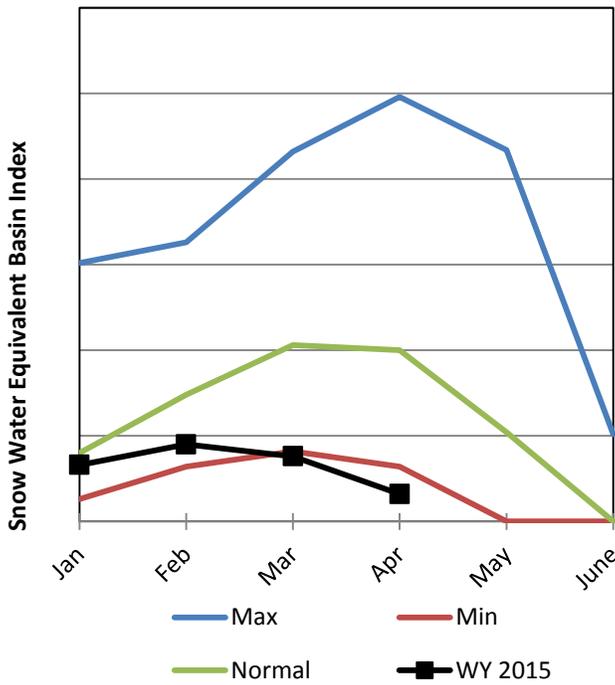
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Owyhee River Basin	9	19%	52%
Owyhee River nr Owyhee	4	12%	57%
Owyhee R. nr Gold Creek	2	0%	27%
S. Fork Owyhee River	4	30%	50%

Eastern Nevada

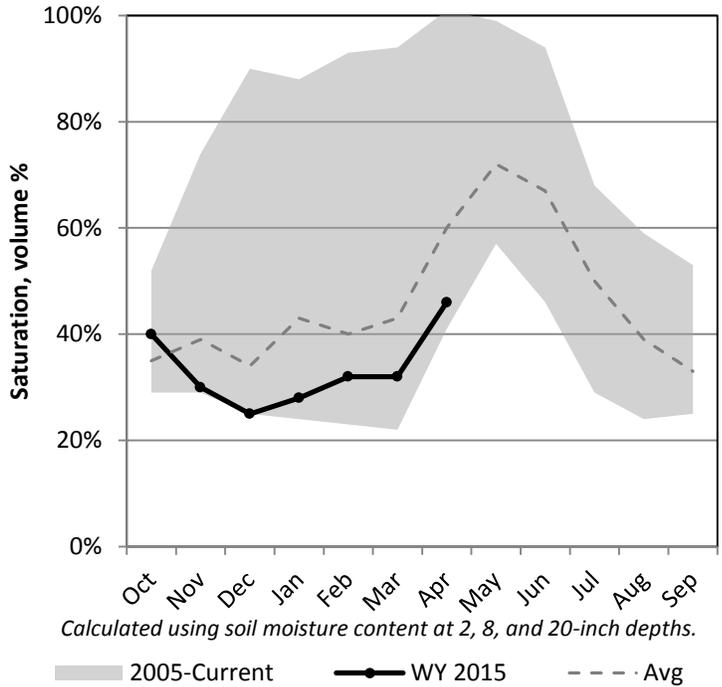
4/1/2015

Snowpack in the Eastern Nevada is much below average at 29% of normal, compared to 73% last year. Precipitation in March was much below average at 27%, which brings the seasonal accumulation (Oct-Mar) to 50% of average. Soil moisture is at 46% compared to 41% last year. Forecast streamflow volumes range from 7% to 19% of average.

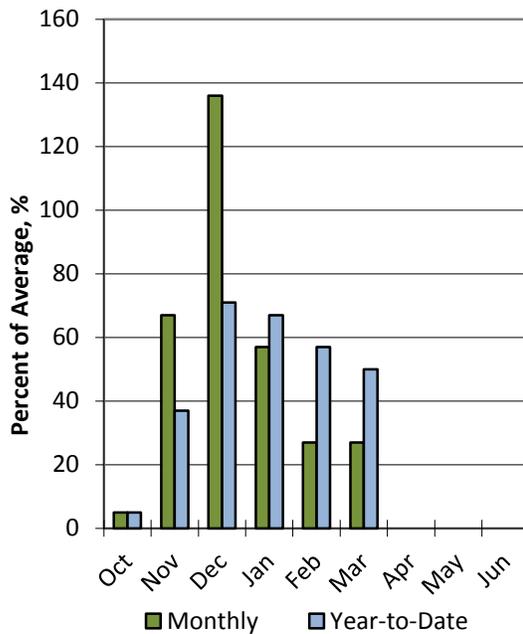
Snowpack



Soil Moisture



Precipitation



Eastern Nevada Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Eastern Nevada	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Kingston Ck nr Austin	APR-JUL	0.036	0.18	0.7	19%	2.1	4.3	3.6
Lehman Ck nr Baker	APR-JUL	0.027	0.054	0.2	7%	0.79	1.66	2.72
Cleve Ck nr Ely	APR-JUL	0	0.04	0.5	11%	1.44	2.8	4.41
Steptoe Ck nr Ely	APR-JUL	0	0.03	0.2	7%	0.63	1.27	2.7

- 1) 90% and 10% exceedance probabilities are actually 95% and 5%
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- 3) Median value used in place of average

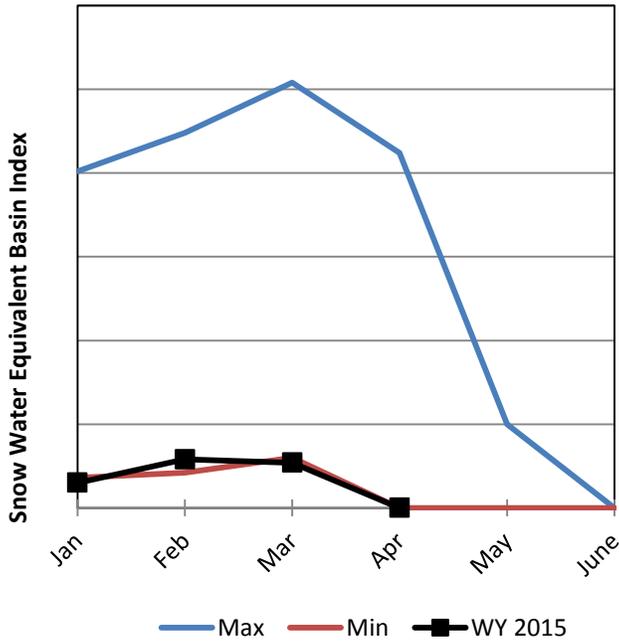
Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Eastern Nevada	10	29%	73%
Kingston Creek	1	28%	76%
Steptoe Valley	3	18%	61%

Lower Colorado River Basin

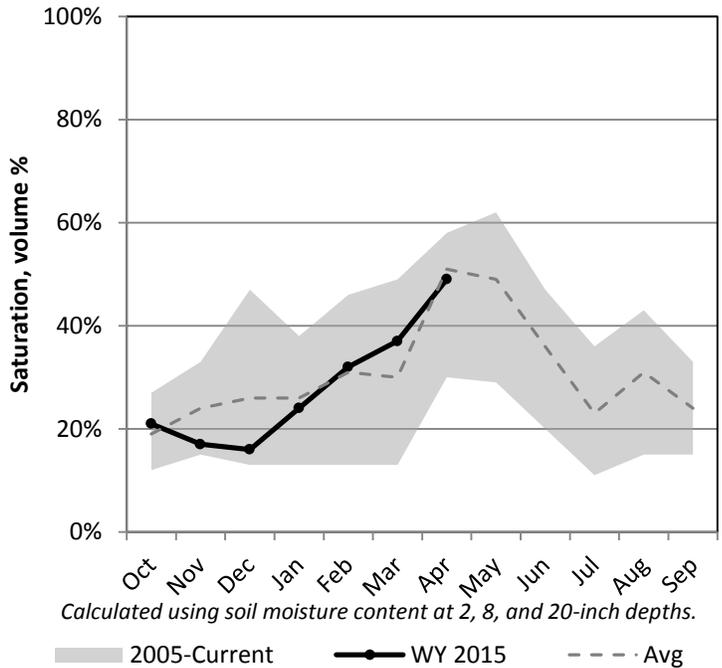
4/1/2015

Precipitation at SNOTEL stations within the Lower Colorado River Basin in March averaged 1.2 inches, which brings the average SNOTEL seasonal accumulation within the basin (Oct-Mar) to 8.6 inches. Soil moisture is at 49% compared to 34% last year. Combined reservoir storage is at 43% of capacity, compared to 48% last year. Forecast streamflow volumes range from 21% to 45% of average.

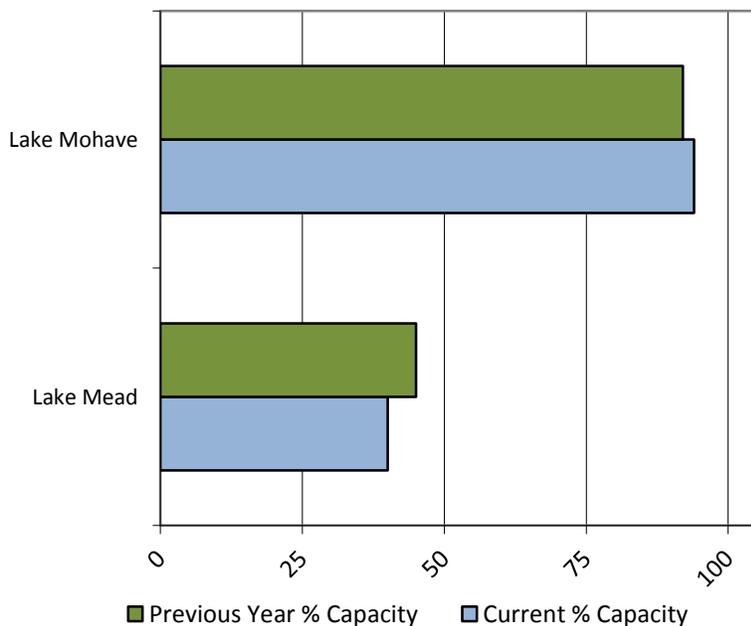
Snowpack



Soil Moisture



Reservoir Storage



Lower Colorado River Basin Streamflow Forecasts - April 1, 2015

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Lower Colorado River Basin	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Virgin R at Littlefield	APR-JUL	0.72	5	13.5	21%	16.8	30	65
Lake Powell Inflow ²	APR-JUL	1770	2570	3200	45%	3900	5050	7160
Virgin R nr Hurricane	APR-JUL	2.8	8.4	14	22%	21	34	63

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Reservoir Storage End of March, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Lake Mead	10419.0	11888.0	20450.0	26159.0
Lake Mohave	1692.7	1660.8	1687.0	1810.0
Basin-wide Total	12111.7	13548.8	22137.0	27969.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis April 1, 2015	# of Sites	% Median	Last Year % Median
Lower Colorado River Basin	4	0%	NA
Spring Mountains	6	14%	NA



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