Utah Water Supply Outlook Report

March, 2012

Skyline Drive above GBRC Meadows, Feb 26, 2012. Photo by Troy Brosten

Water Supply Outlook Reports
and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Snow Survey Staff, 245 N Jimmy Doolittle Rd, SLC Utah, 84041 - Phone: (801)524-5213
Travis Thomason, Area Conservationist, 340 N. 600 E., Richfield, UT 84701 - Phone: (435) 896-6441
Kerry Goodrich, Area Conservationist, 2871 S Commerce Way, Ogden UT 84401 (801)629-0580 x15
Barry Hamilton, Area Conservationist, 540 W, Price River Dr. Price, UT 84501-2813 - Phone: (435) 637-0041
Internet Address: http://www.ut.nrcs.usda.gov/snow/

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 it melts. Measurements of snow water equivalent at selected manual snowcourses 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. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. 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 uncertain 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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STATE OF UTAH GENERAL OUTLOOK
March 1, 2012

SUMMARY

Snowpacks are below to much below average over Utah. Snowmelt runoff conditions are poor and not likely to improve significantly over the next month. There is only one month remaining in the snow accumulation season and the accumulation necessary in March to get to average ranges between 200% on the Bear to over 400% for southwest Utah. Most areas need a 250% of average accumulation to reach average by April 1 – not real likely to happen. What is more likely is that we will see 70% to 80% of normal snowpacks this year. February precipitation was much below (68% on the Weber) to near average (103% on the Uintahs). Central Utah to the Duchesne was near average with the southwest and north below average which brings the year to date precipitation to a below average 84%. Current soil moisture saturation levels in runoff producing areas are: Bear – 50%, Weber – 51%, Provo – 35%, Uintah Basin – 41%, SE Utah – 39%, Sevier – 44% and SW Utah – 41% of saturation. Northern Utah soils are dry and southern Utah soils are near average, all are much less than last year. Low snowpacks and low soil moisture lead to poor runoff. Reservoir storage is currently at 87% of capacity statewide which is 17% more than last year at this time. General water supply conditions (expected runoff plus reservoir storage) are near average across the state due to good reservoir storage. Streamflow forecasts range from 41% on Vernon Creek to 89% on the Whiterocks River nr Whiterocks. Surface Water Supply Indices range from 37% on Ferron Creek to 75% for the lower Sevier River.

SNOWPACK

March first snowpacks as measured by the NRCS SNOTEL system are as follows: Bear - 77%, Weber - 69%, Provo - 64%, Uintahs - 78%, southeast Utah - 62%, Sevier - 71%, southwest Utah - 77% and the statewide figure is 72% of average. With only March remaining in the snow accumulation season, the range of potential snowpack outcomes is fairly small depending on future climatic conditions. If drought and early melt prevail, snowpacks could range between 15% (SW Utah) and 50% (Bear) of average. Given maximum accumulations, April 1 snowpacks could range between 90% (Weber) and 125% (SW Utah) of average. Getting back to 'average April 1 SWE' at this point requires maximum and above accumulation in March. With normal accumulations, April 1 snowpacks will be between 70% and 80% of average snowpack statewide.

PRECIPITATION

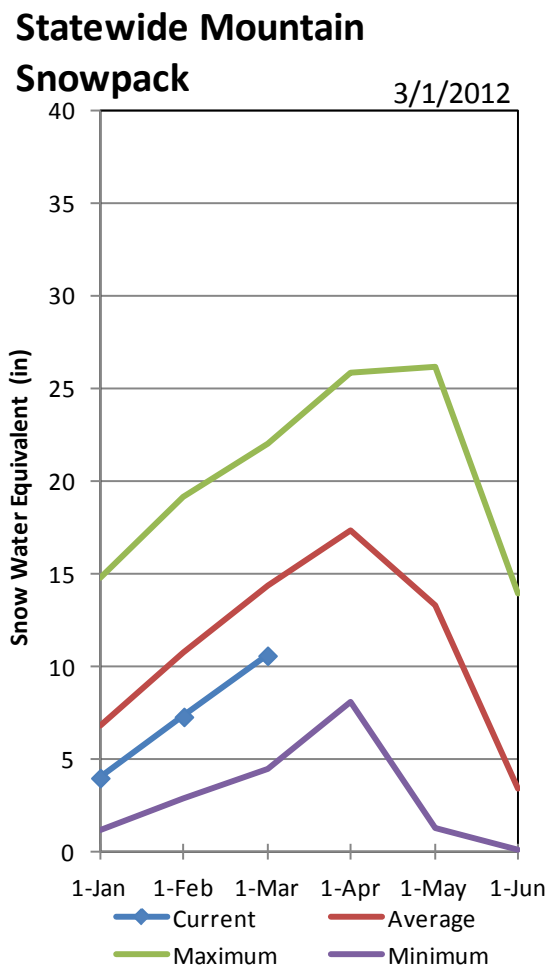
Mountain precipitation during February was: Bear – 83%, Weber – 68%, Provo – 81%, Uintahs – 103%, SE Utah – 91%, Sevier – 100%, SW Utah – 77% and the statewide figure is 86% of average. This brings the seasonal accumulation (Oct-Feb) to 84% of average statewide.

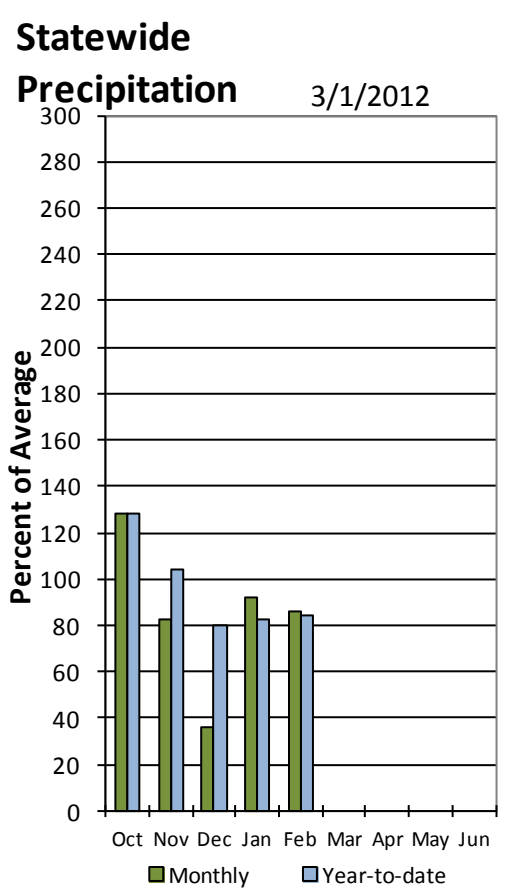
RESERVOIRS

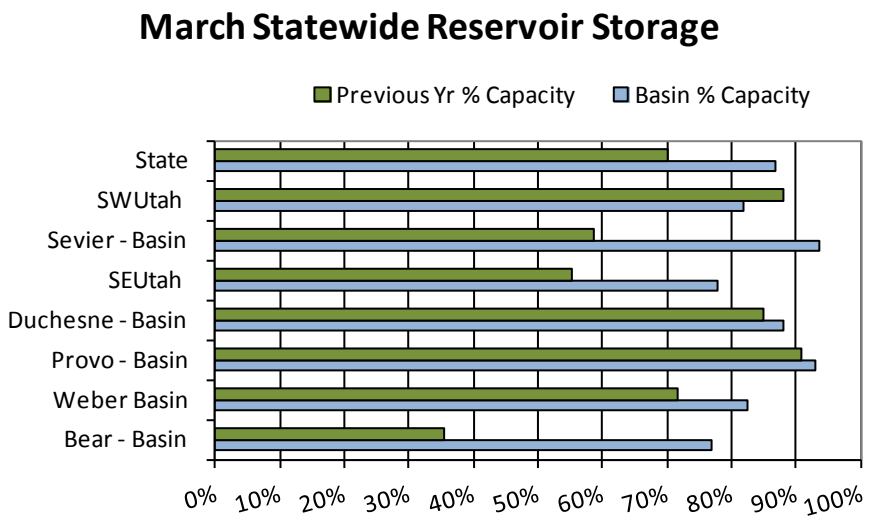
Storage in 41 of Utah's key irrigation reservoirs is at 87% of capacity, 17% more than last year. Reservoir storage by Basin: Bear – 77%, Weber – 82%, Provo – 93%, Uintah Basin – 88%, SE Utah – 78%, Sevier – 93%, SW Utah – 82% of capacity.

STREAMFLOW

Snowmelt streamflows are expected to be below to much below average across the state this year. Forecast streamflows range from 41% on Vernon Creek to 89% on the Whiterocks River. Most flows are forecast to be in the 50% to 80% range.

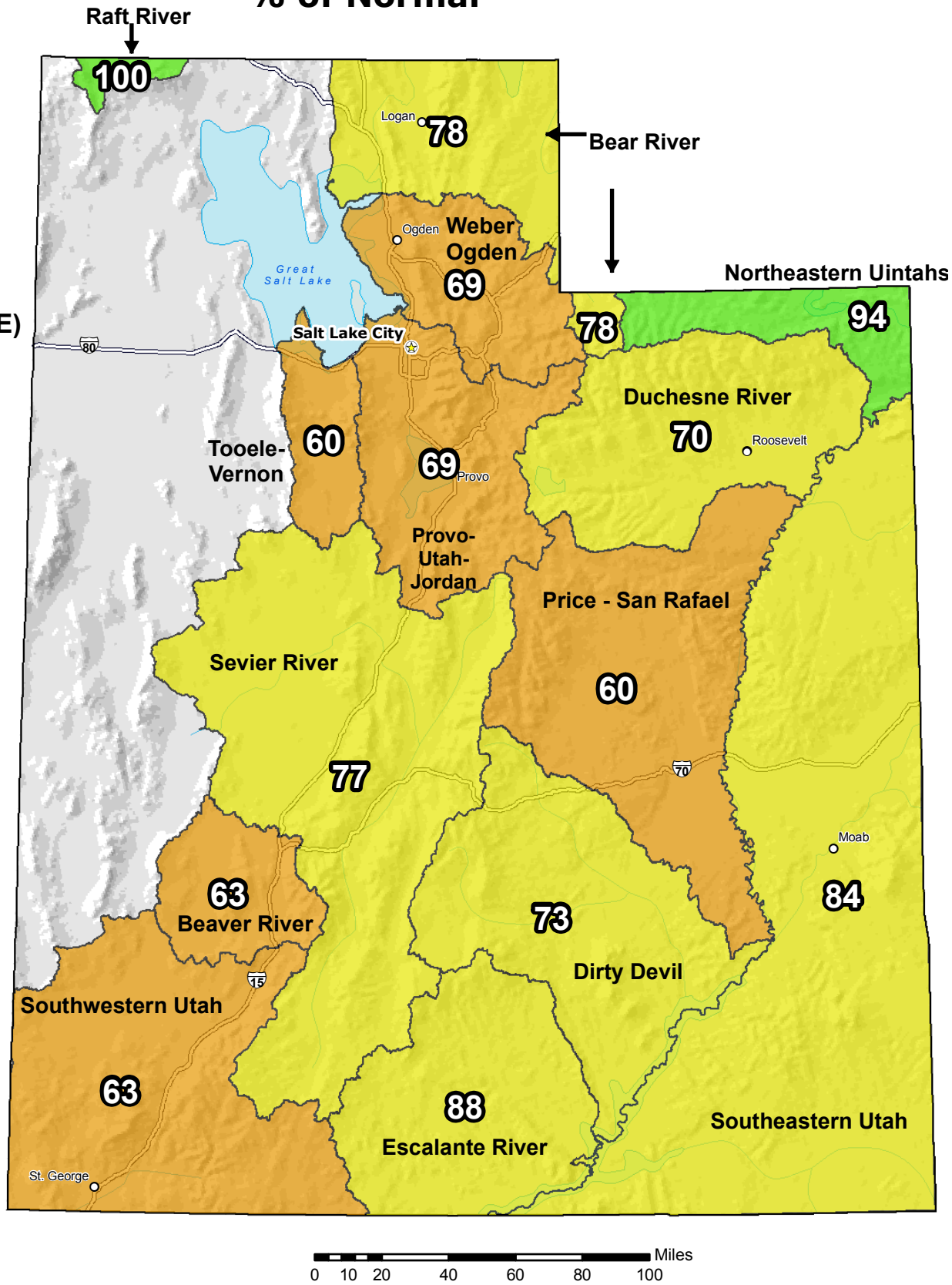

Statewide Mountain Snowpack
3/1/2012
Snow Water Equivalent (in)
40
35
30
25
20
15
10
5
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
Current
Average
Maximum
Minimum


Statewide Precipitation
3/1/2012
Percent of Average
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Monthly
Year-to-date


March Statewide Reservoir Storage
Previous Yr % Capacity
Basin % Capacity
State
SWUtah
Sevier - Basin
SEUtah
Duchesne - Basin
Provo - Basin
Weber Basin
Bear - Basin
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Utah
SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 01, 2012



Snow Water Equivalent (SWE) Basin-wide Percent of 1971-2000 Normal

- unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

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

Provisional Data Subject to Revision

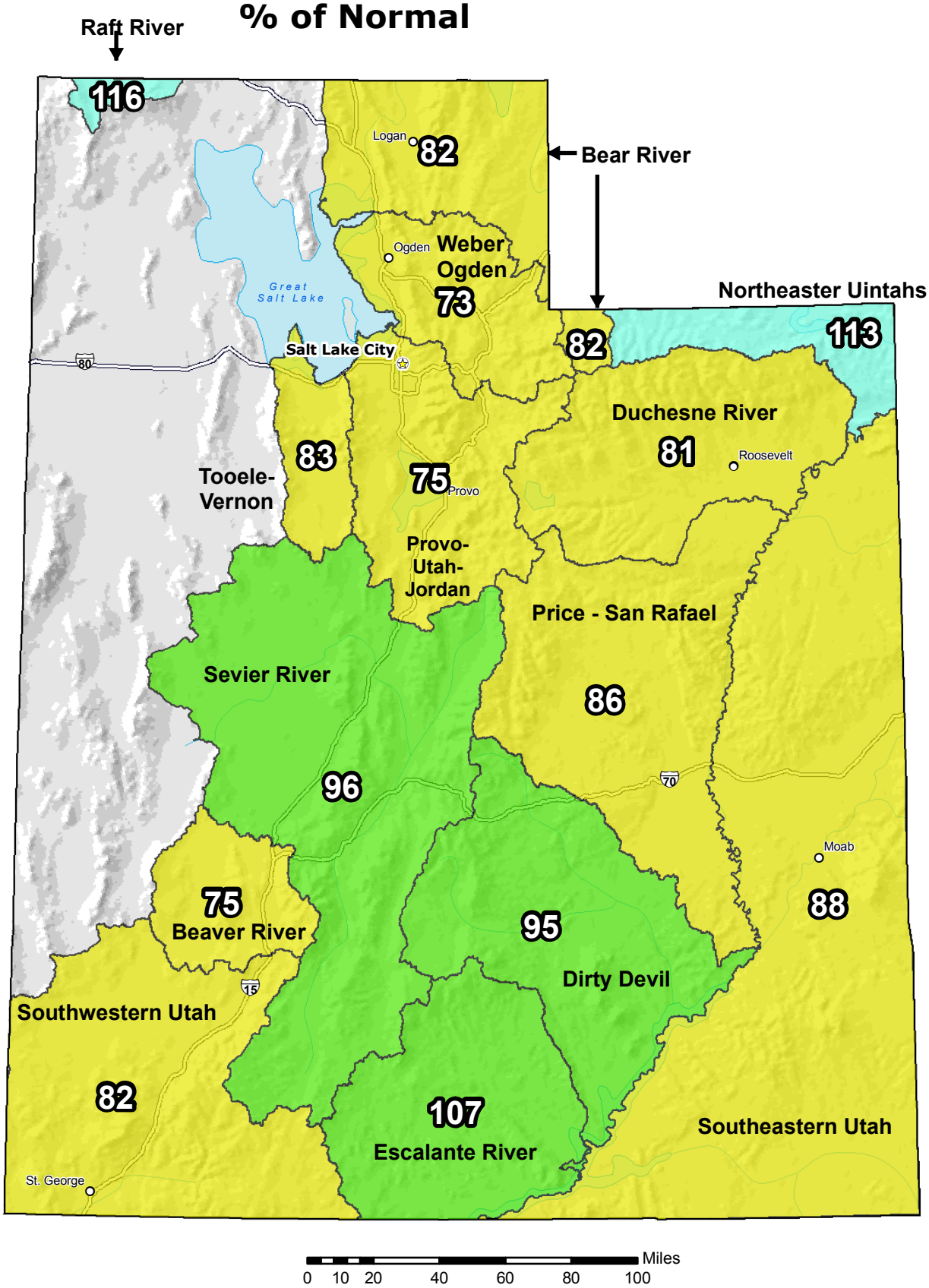
USDA NRCS

The snow water equivalent percent of normal represents the current 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 the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

Utah
SNOTEL Water Year (Oct 1) to Date Precipitation
% of Normal

Mar 05, 2012



Water Year (Oct 1) to Date Precipitation Basin-wide Percent of 1971-2000 Normal

- unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

* *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 the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
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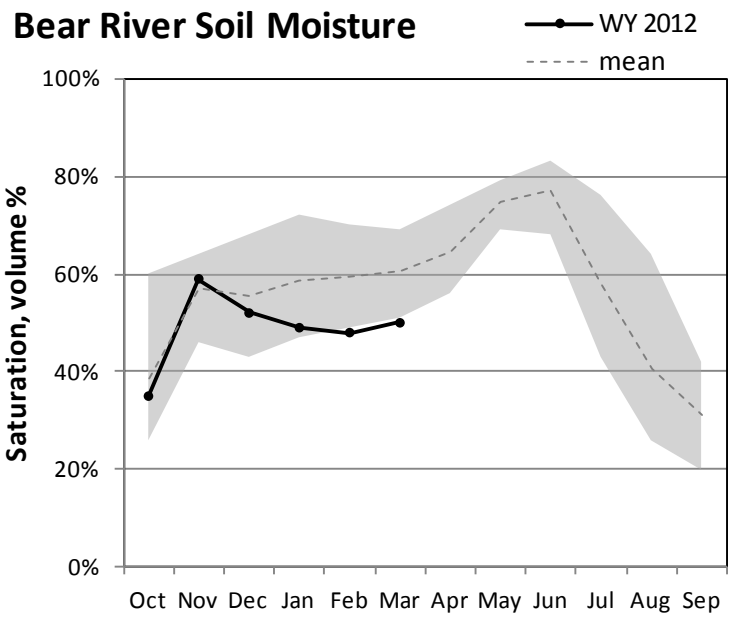
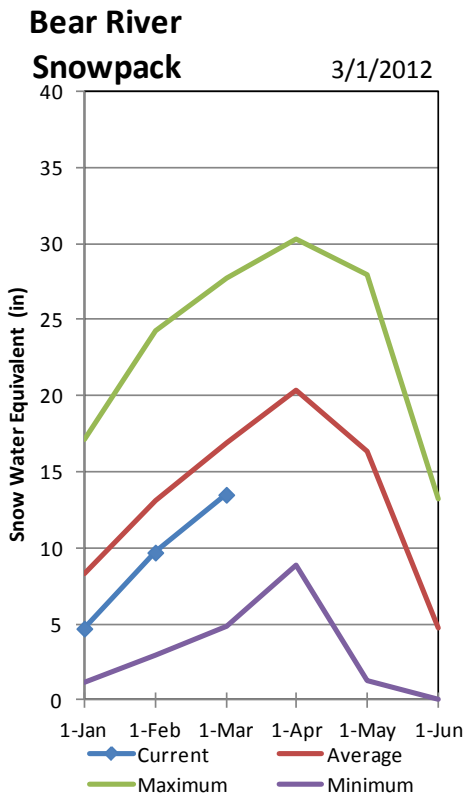
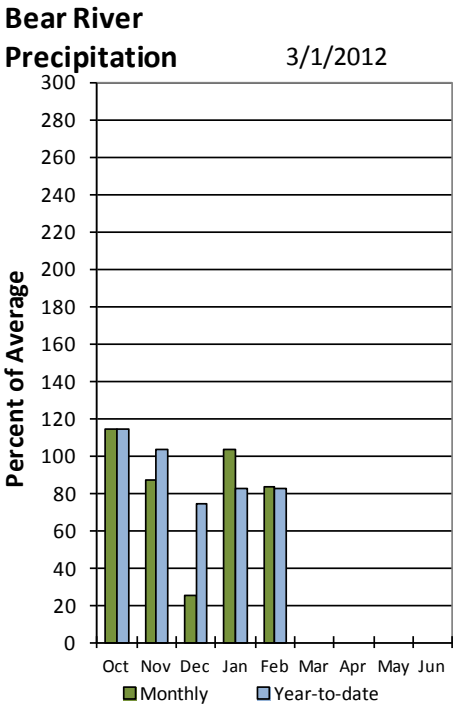
Bear River Basin
March 1, 2012

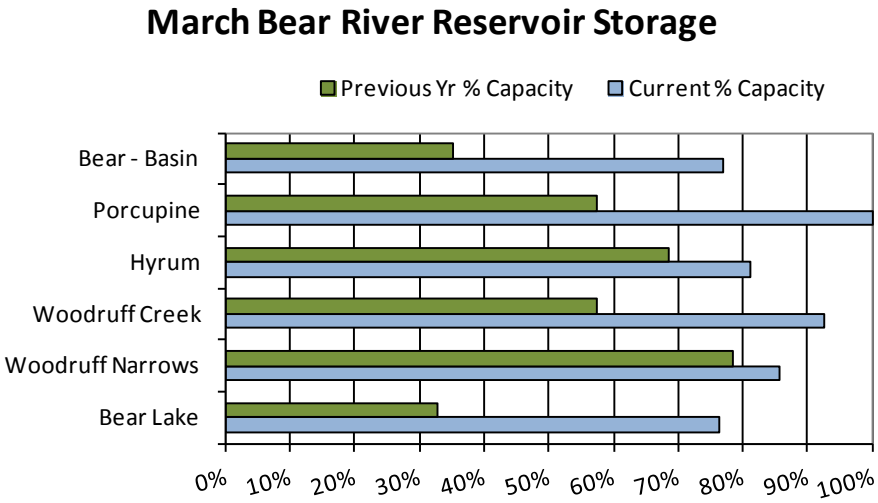
Snowpacks on the Bear River Basin are below average at 76% of normal, about 61% of last year. Individual sites range from 56% of average at Trial Lake Snow Course to 93% at Little Bear Snotel. February precipitation was below average at 83%, which brings the seasonal accumulation (Oct-Feb) to 82% of average. Soil moisture levels in runoff producing areas are at 50% of saturation in the upper 2 feet of soil compared to 69% last year. Forecast streamflows (April-July) are much below average to below average (57%-73%) volumes for this spring and summer. Reservoir storage is 77% of capacity, which is 42% higher than this time last year. The Surface Water Supply Index is at 68% for the Bear River, in other words, 32% of years have had more total water available. Overall water supply conditions are above average.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

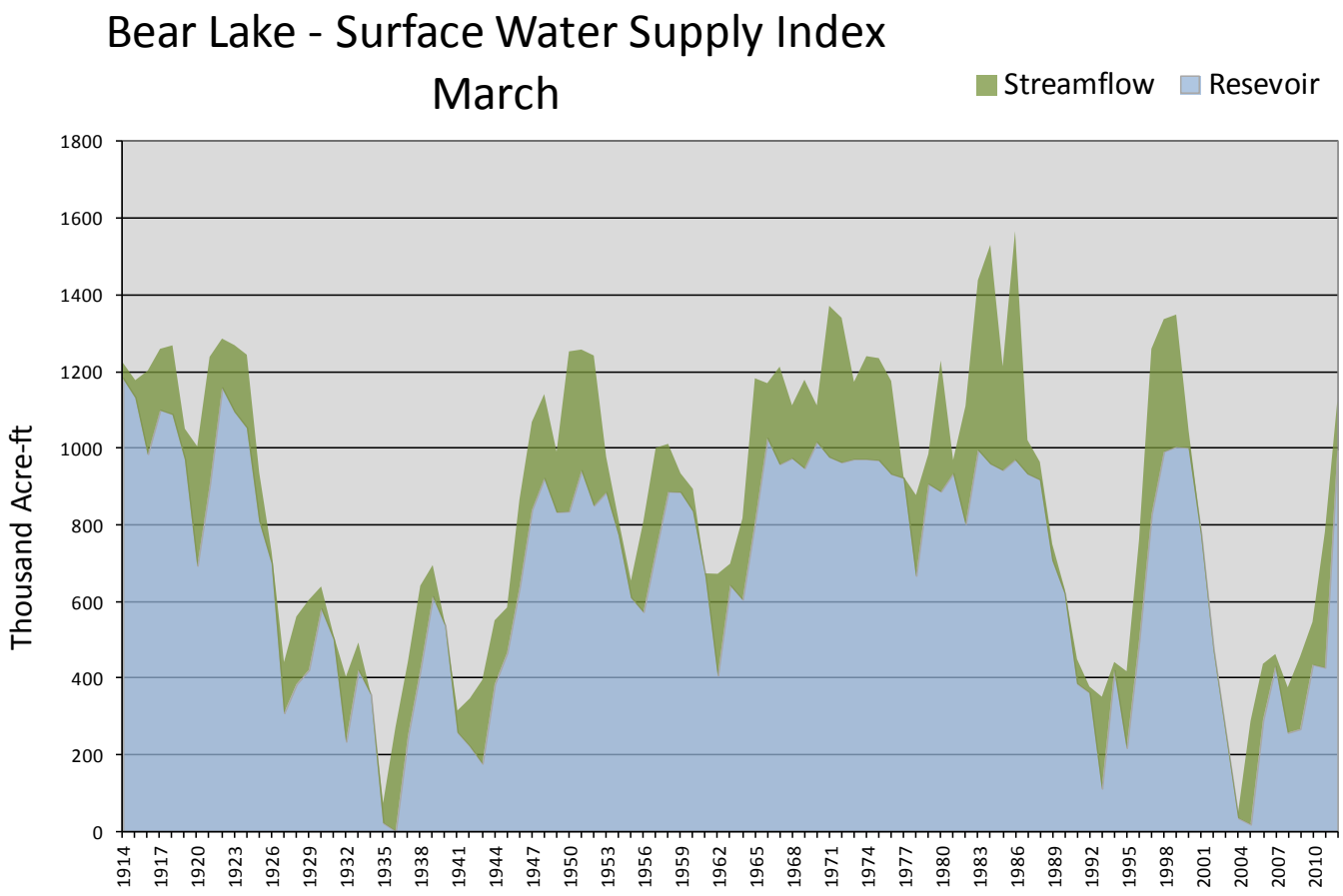






March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Bear Lake	April-July Forecast below Stewart Dam	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Bear River	**994**	**130**	**1124**	**1.50**	**68**	**70, 68, 48, 66**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



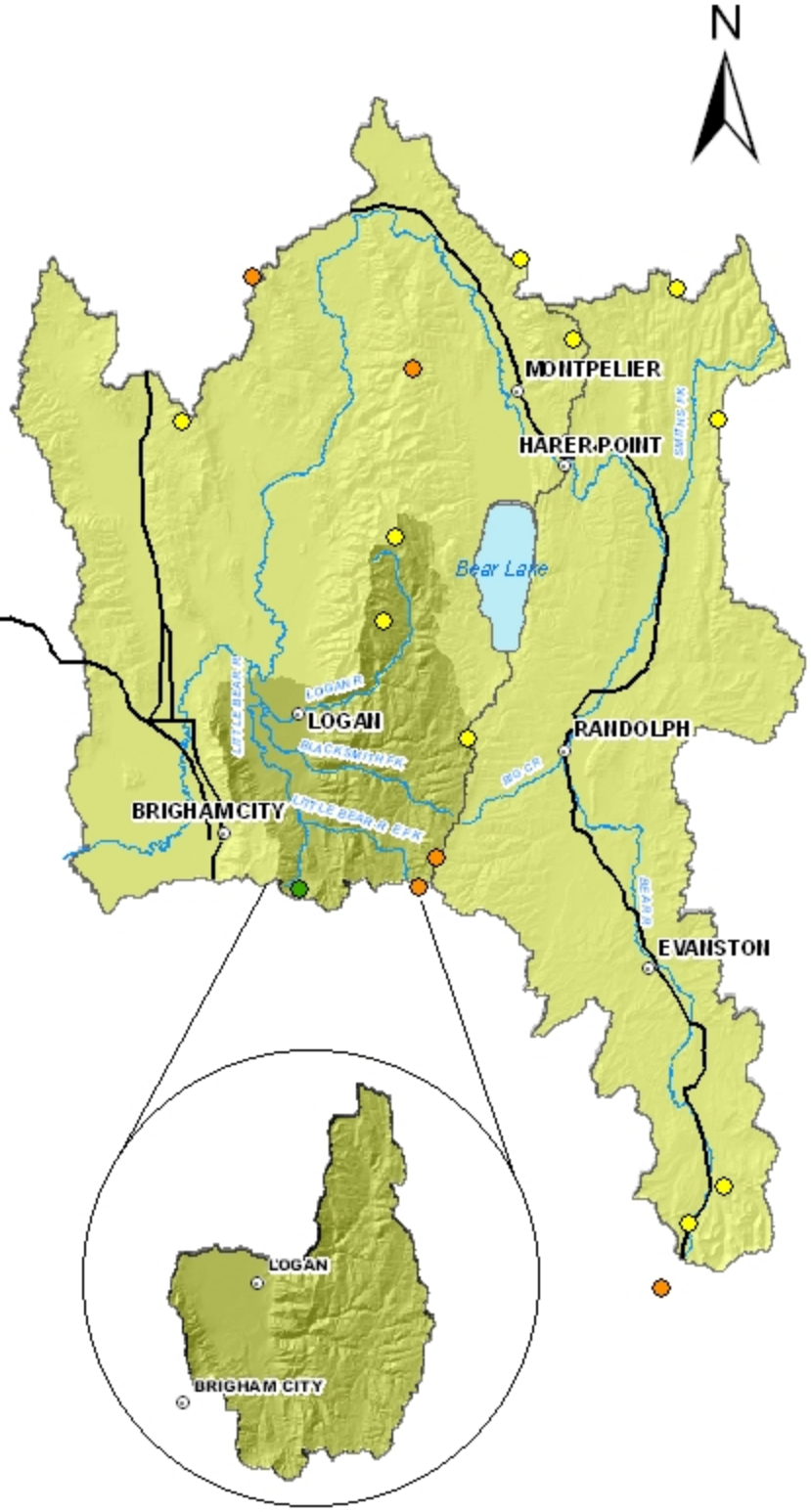
Bear River & Raft River Basins

Basinwide Average

78 %

Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%



Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Provisional Data Subject to Revision

0 5 10 20 30 40 50 Miles

BEAR RIVER BASIN as of March 1, 2012

BEAR RIVER BASIN
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bear R nr UT-WY State Line	APR-JUL	50	69	82	73	95	114	113
Bear R ab Res nr Woodruff	APR-JUL	31	59	78	57	97	125	136
Big Ck nr Randolph	APR-JUL	1.25	2.40	3.20	65	4.00	5.20	4.90
Smiths Fk nr Border	APR-JUL	38	54	65	63	76	92	103
Bear R bl Stewart Dam	APR-JUL	14.0	83	130	56	177	245	234
Little Bear R at Paradise	APR-JUL	10.4	23	32	70	41	54	46
Logan R nr Logan	APR-JUL	48	67	80	64	93	112	126
Blacksmith Fork nr Hyrum	APR-JUL	5.9	20	30	63	40	54	48
Dunn Ck nr Park Valley	APR-JUL	0.58	1.48	2.0	68	2.70	3.0	3.10

BEAR RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BEAR LAKE	1302.0	993.6	426.7	697.5
HYRUM	15.3	12.4	10.5	11.0
PORCUPINE	11.3	11.3	6.5	5.6
WOODRUFF NARROWS	57.3	49.0	45.0	27.6
WOODRUFF CREEK	4.0	3.7	2.3	---

BEAR RIVER BASIN
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
BEAR RIVER, UPPER	8	59	76
BEAR RIVER, LOWER	9	64	78
LOGAN RIVER	4	65	83
RAFT RIVER	1	89	100
BEAR RIVER BASIN	17	63	78

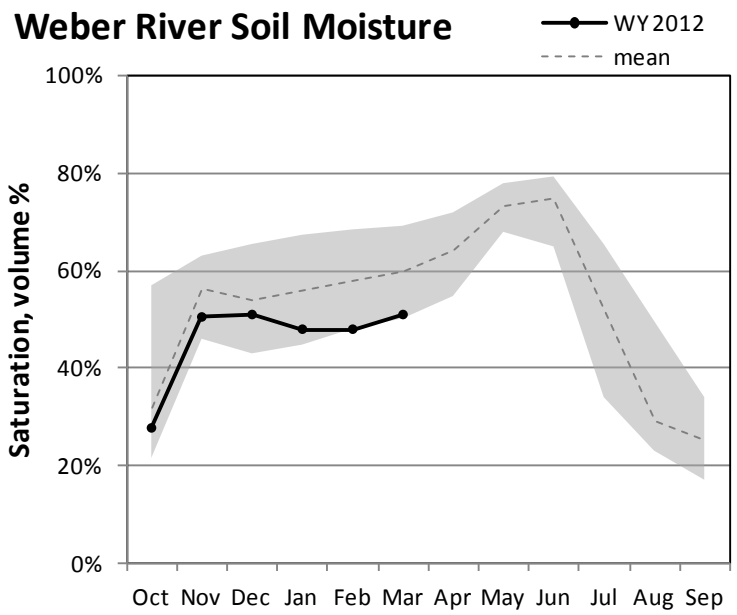
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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.
(3) - Median value used in place of average.

Weber and Ogden River Basins
March 1, 2012

Snowpacks on the Weber and Ogden Watersheds are much below average at 69%, about 55% of last year. Individual sites range from 56% of average at Trial Lake to 99% at Hardscrabble Snotel. February precipitation was much below average at 68% bringing the seasonal accumulation (Oct-Feb) to 73% of average. Soil moisture levels in runoff producing areas are at 51% of saturation in the upper 2 feet of soil compared to 67% last year. Streamflow forecasts (April-July) are much below average, raning from 51% to 63% of average. Reservoir storage is at 82% of capacity, 10% higher than last year. The Surface Water Supply Index is at 48% for the Weber River and 50% for the Ogden River indicating that overall water supply conditions are average.



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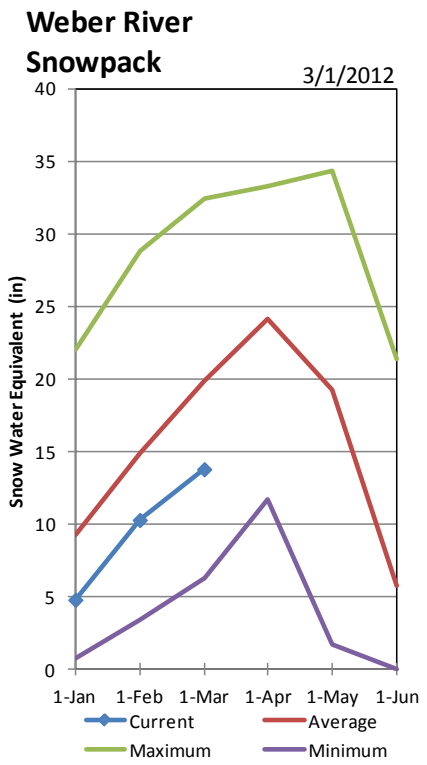
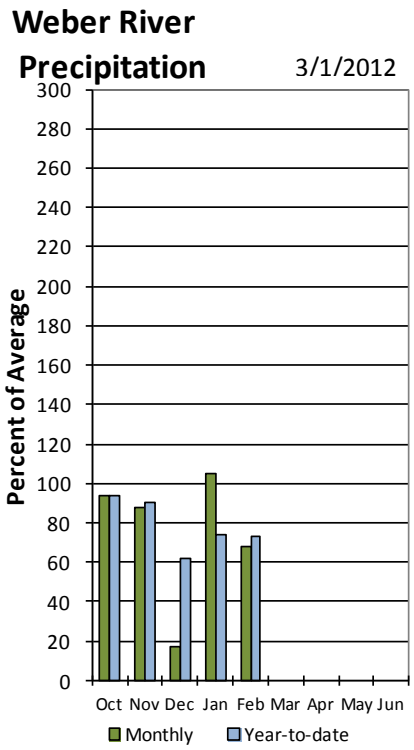
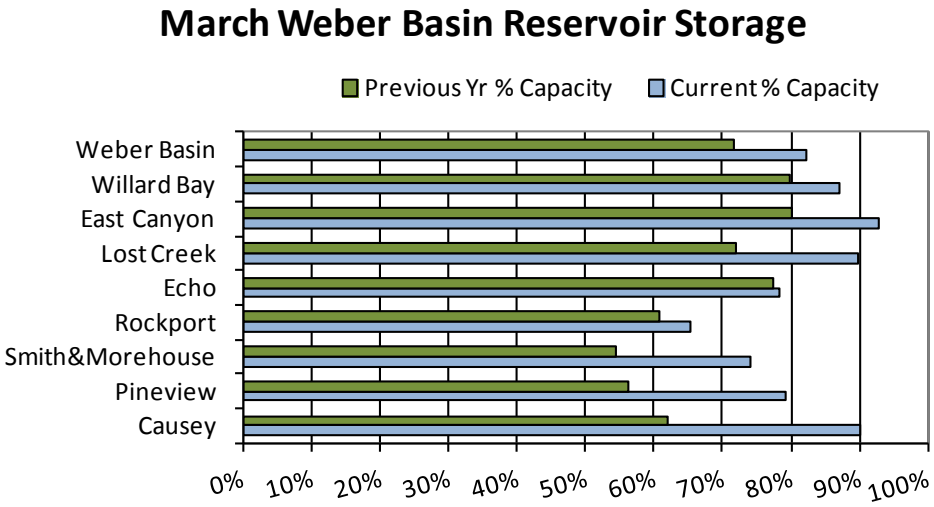
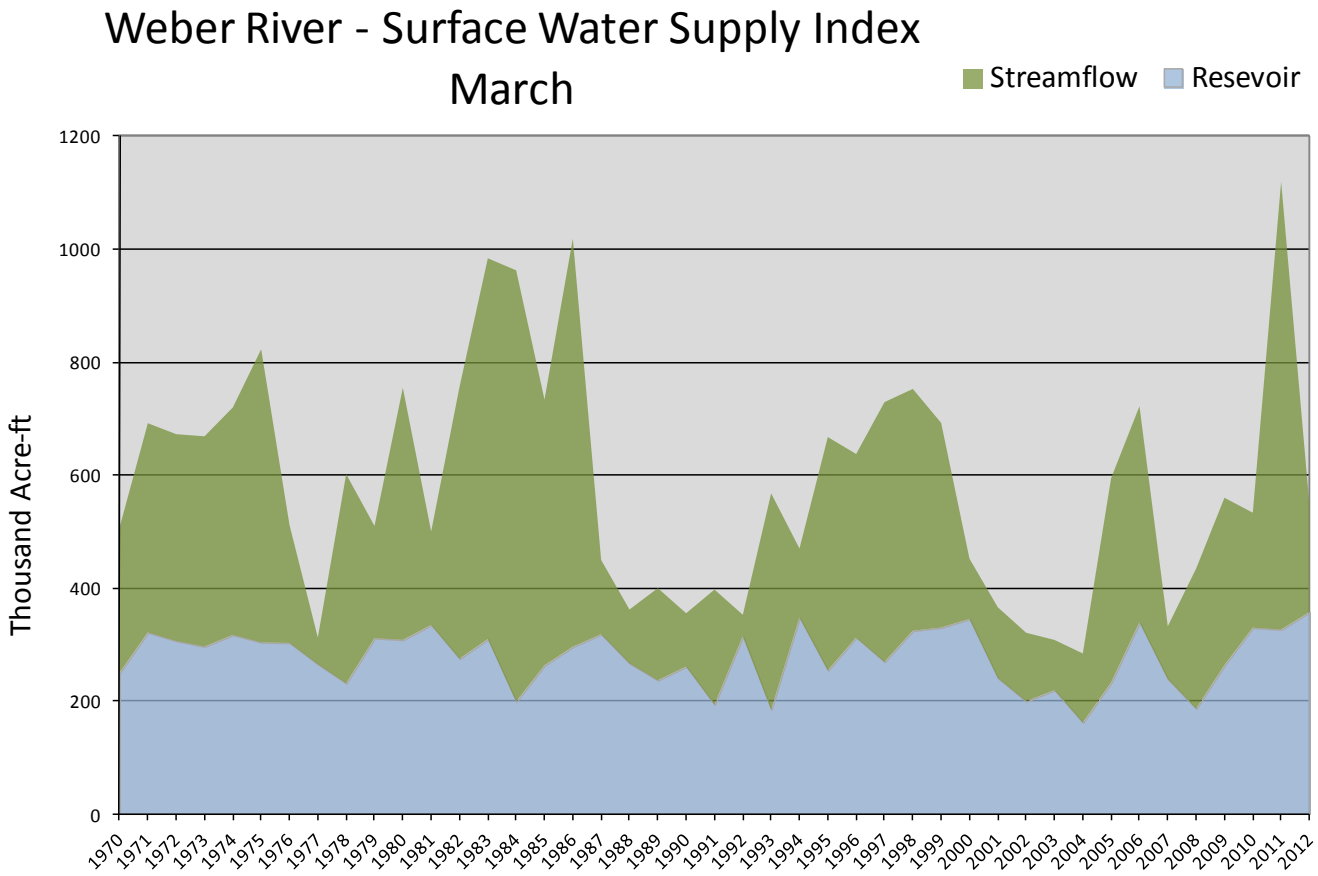






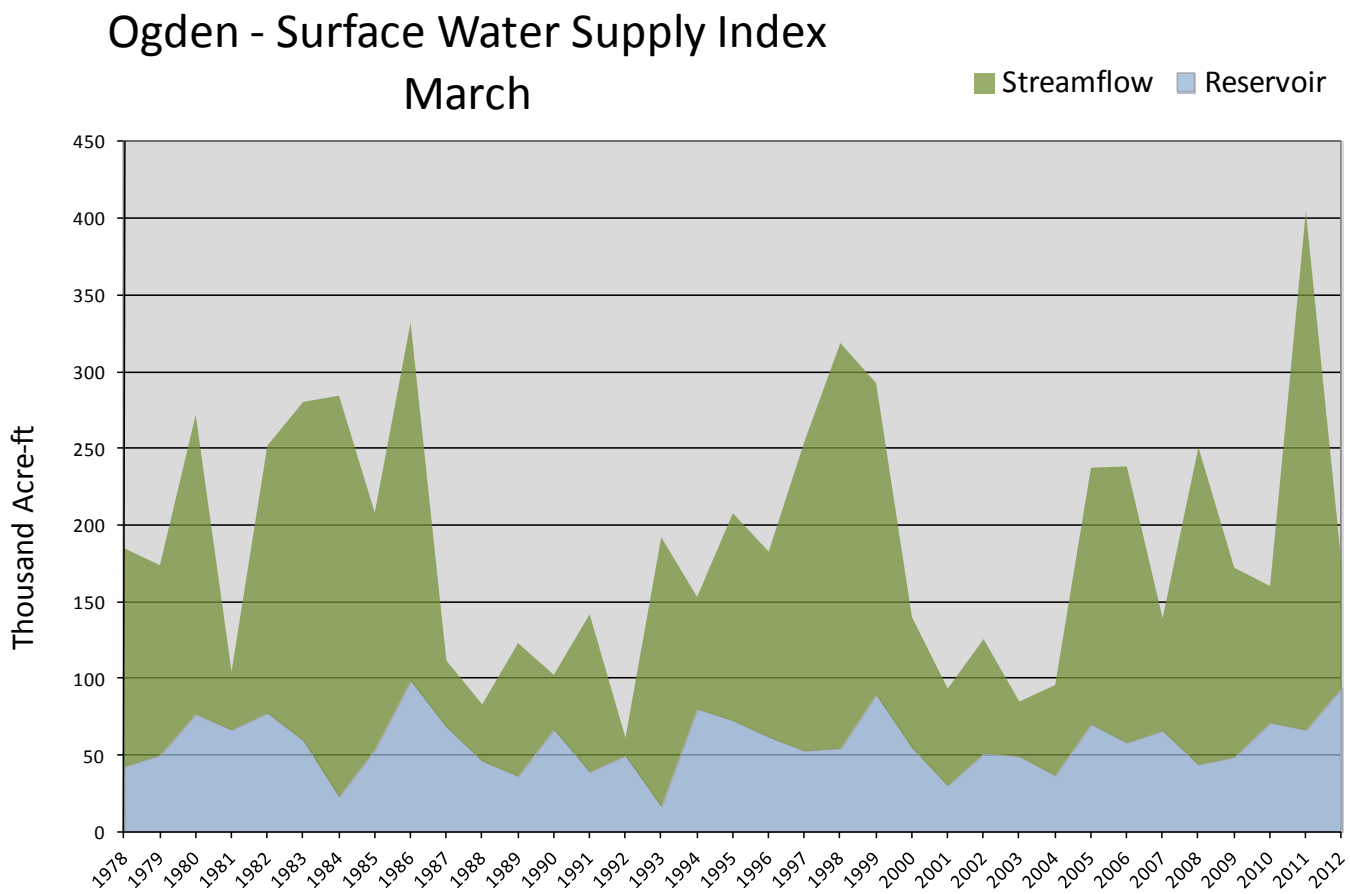
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Reservoirs	April-July Forecast Weber River at Gateway	Reservoirs + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Weber River	**357**	**190**	**547**	**-0.19**	**48**	**76, 10, 09, 93**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Pine View & Causey	April-July Forecast Pineview Reservoir Inflow	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Ogden River	**94**	**80**	**174**	**0.00**	**50**	**09, 10, 79, 96**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



Weber & Ogden Basins

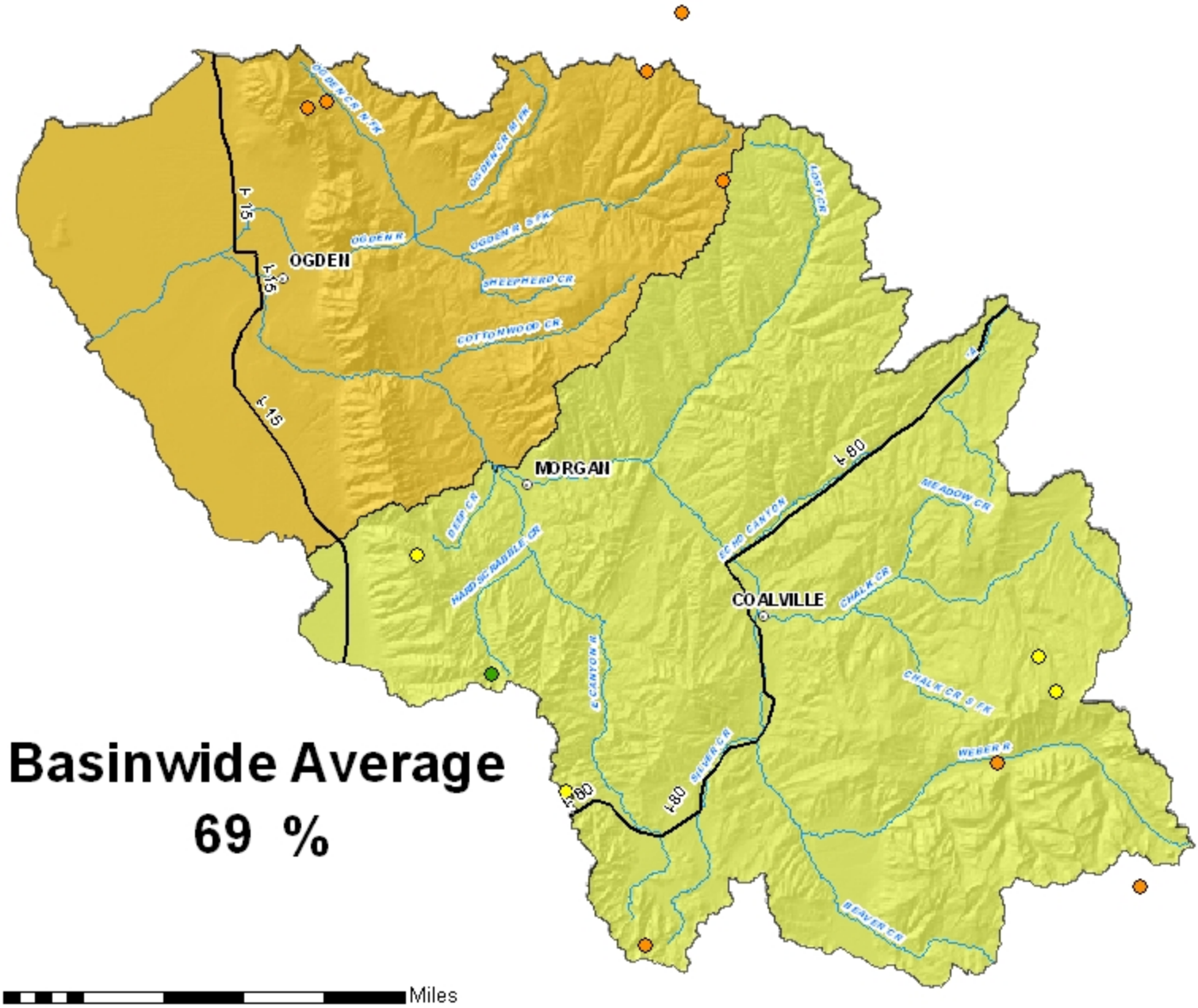
Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%

N



Basinwide Average

69 %

0 2.5 5 10 15 20 25 Miles

Provisional Data
Subject to Revision

WEBER & OGDEN WATERSHEDS in Utah as of March 1, 2012

WEBER & OGDEN WATERSHEDS in Utah
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Smith & Morehouse Res Inflow	APR-JUL	13.2	17.9	21	62	24	29	34
Weber R nr Oakley	APR-JUL	46	63	74	60	85	102	123
Rockport Res	APR-JUL	38	60	75	56	90	112	134
Weber R nr Coalville	APR-JUL	33	60	78	57	96	123	137
Chalk Ck at Coalville	APR-JUL	4.6	17.4	26	58	35	47	45
Echo Res Inflow	APR-JUL	19.0	67	100	56	133	181	179
Lost Ck Resv Inflow	APR-JUL	1.7	6.0	9.0	51	12.0	16.3	17.6
East Canyon Ck nr Jeremy Ranch	APR-JUL	0.3	4.9	9.0	63	13.1	19.1	14.2
East Canyon Ck nr Morgan	APR-JUL	1.9	11.5	18.0	58	25	34	31
Weber R at Gateway	APR-JUL	7.0	107	190	54	275	395	355
SF Ogden R nr Huntsville	APR-JUL	16.6	29	38	59	47	59	64
Pineview Res Inflow	APR-JUL	26	58	80	60	102	134	133
Wheeler Ck nr Huntsville	APR-JUL	0.53	2.50	3.80	60	5.10	7.10	6.30
Centerville Ck	APR-JUL	0.04	0.39	0.77	60	1.15	1.70	1.28

WEBER & OGDEN WATERSHEDS in Utah
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CAUSEY	7.1	6.4	4.4	2.6
EAST CANYON	49.5	45.9	39.7	35.4
ECHO	73.9	57.8	57.1	51.0
LOST CREEK	22.5	20.2	16.2	13.9
PINEVIEW	110.1	87.3	62.0	52.6
ROCKPORT	60.9	39.8	37.1	33.2
WILLARD BAY	215.0	187.2	171.6	154.9

WEBER & OGDEN WATERSHEDS in Utah
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OGDEN RIVER	4	58	66
WEBER RIVER	9	54	71
WEBER & OGDEN WATERSHEDS	13	55	69

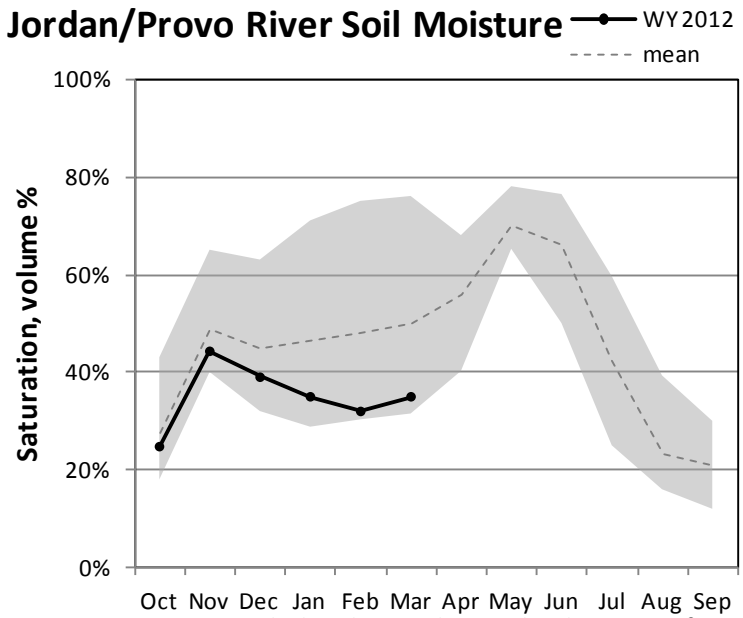
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

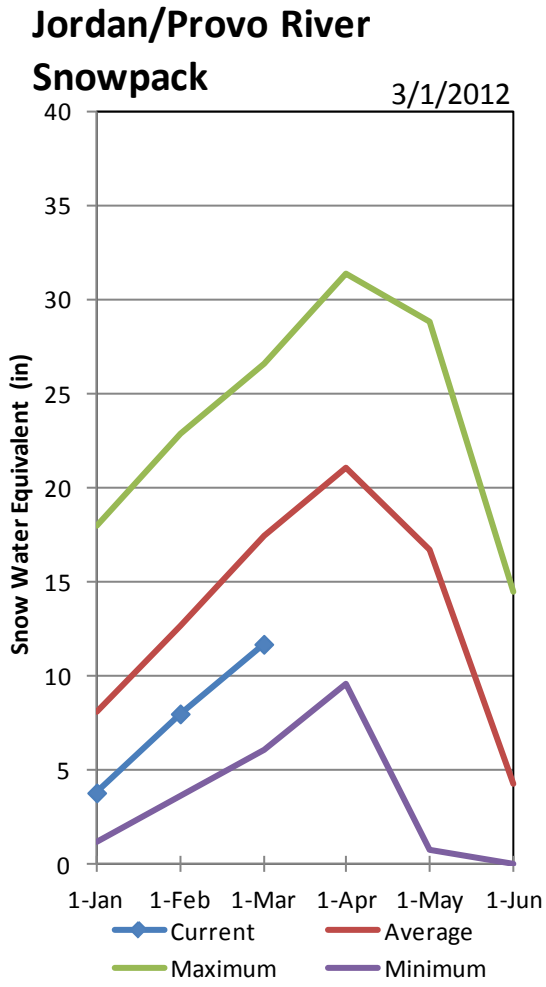
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.
(3) - Median value used in place of average.

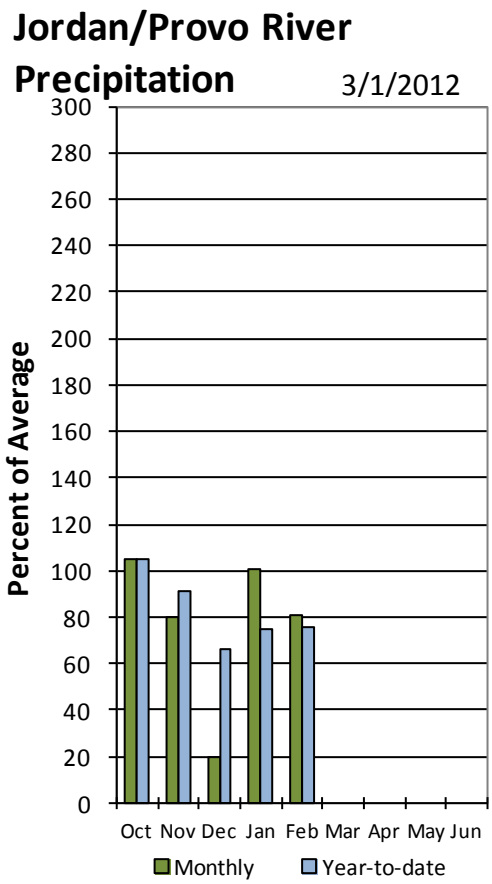
Utah Lake, Jordan River & Tooele Valley Basins
March 1, 2012

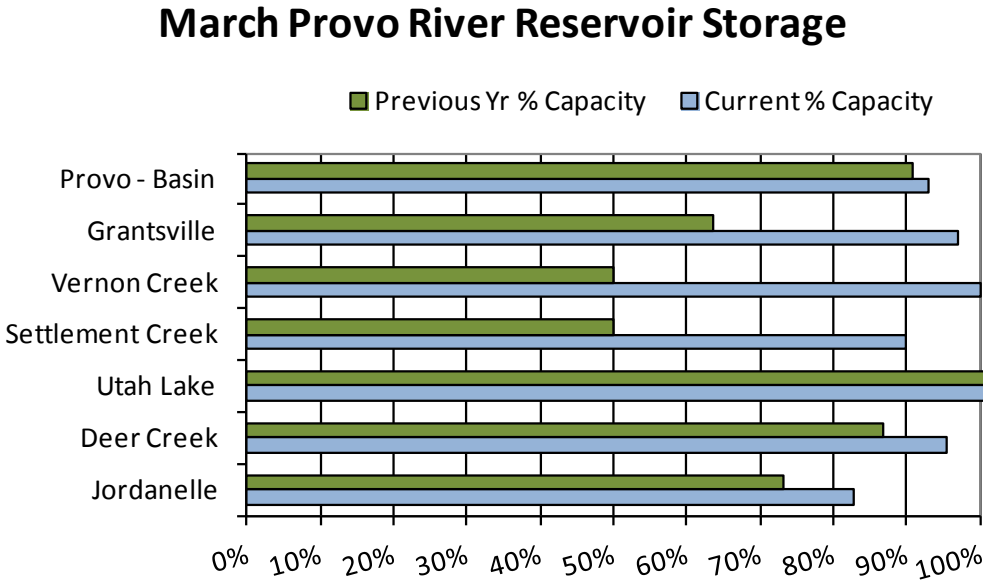
Snowpack over these basins are much below average at 66%, which is 51% of last year. Individual sites range from 43% at Hobble Creek snow course to 84% of average at Lambs Canyon snow course. February precipitation was below average at 81%, bringing the seasonal accumulation (Oct-Feb) to 76% of average. Average soil moisture in runoff producing areas is estimated at 35% of saturation in the upper 2 feet of soil compared to 58% at this time last year. Reservoir storage is at 93% of capacity, 2% higher than last year. Streamflow forecasts (Apr-July) range from 41% to 75% of average. The Surface Water Supply Index below Deer Creek reservoir is 50%, indicating general water supply conditions are near average.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

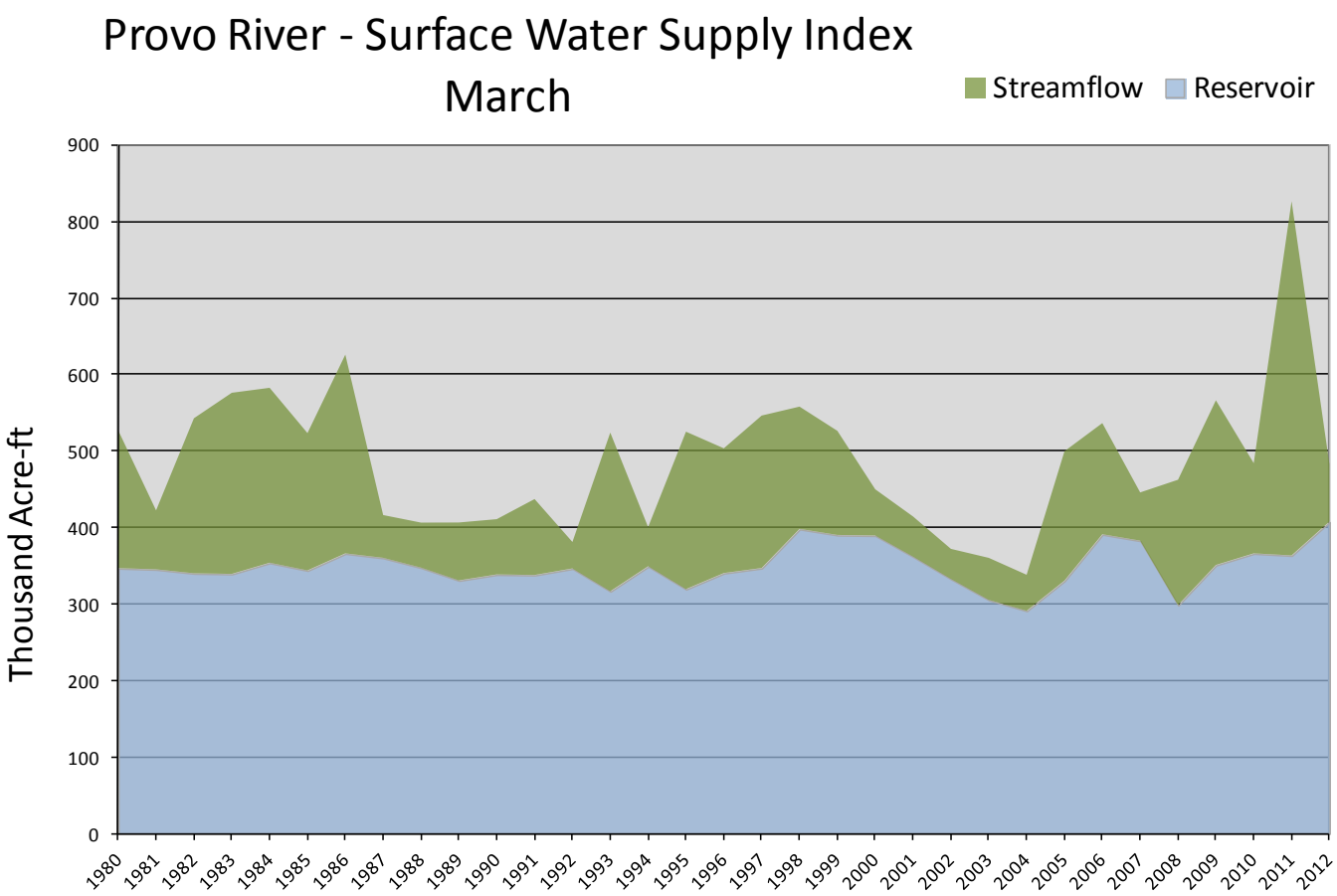




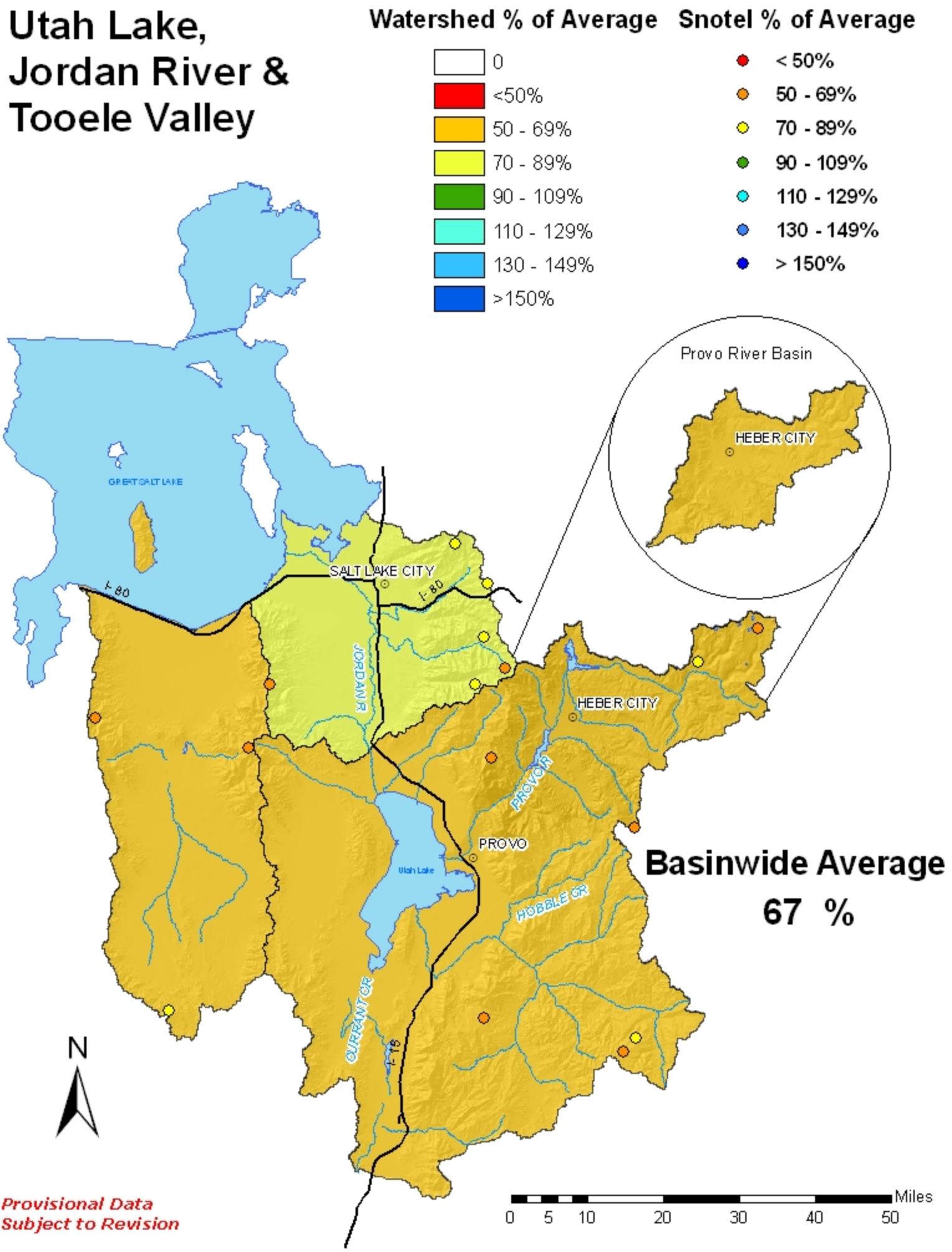


March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Deer Creek, Jordanelle	April - July Forecast Provo River below Deer Creek	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Provo River	**408**	**75**	**483**	**0.00**	**50**	**09, 08, 10, 05**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



Utah Lake, Jordan River & Tooele Valley



Provisional Data
Subject to Revision

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY as of March 1, 2012

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Salt Ck at Nephi	APR-JUL	0.28	2.30	5.70	61	9.10	14.10	9.40
Spanish Fk at Castilla	APR-JUL	1.5	9.0	44	57	79	130	77
Provo R nr Woodland	APR-JUL	36	52	65	63	79	102	103
Provo R nr Hailstone	APR-JUL	36	54	68	62	84	110	109
Provo R bl Deer Ck Dam	APR-JUL	37	60	75	60	90	113	126
American Fk ab Upper Powerplant	APR-JUL	5.1	12.8	18.0	56	23	31	32
Utah Lake Inflow	APR-JUL	10.0	75	210	65	380	610	325
W Canyon Ck nr Cedar Fort	APR-JUL	0.12	0.59	1.00	42	1.41	2.00	2.40
L Cottonwood Ck nr SLC	APR-JUL	21	26	30	75	34	41	40
Big Cottonwood Ck nr SLC	APR-JUL	14.8	22	27	71	32	39	38
Mill Ck nr SLC	APR-JUL	0.25	2.50	4.00	57	5.50	7.80	7.00
Parley's Ck nr SLC	APR-JUL	1.0	6.2	9.7	58	13.2	18.4	16.7
Dell Fk nr SLC	APR-JUL	0.27	1.07	3.70	54	6.30	10.20	6.80
Emigration Ck nr SLC	APR-JUL	0.09	1.17	2.50	56	3.80	5.80	4.50
City Ck nr SLC	APR-JUL	0.92	3.50	5.30	61	7.10	9.70	8.70
Vernon Ck nr Vernon	APR-JUL	0.03	0.21	0.60	41	1.08	1.78	1.48
S Willow Ck nr Grantsville	APR-JUL	0.47	1.38	2.00	62	2.60	3.50	3.23

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DEER CREEK	149.7	142.9	129.8	107.4
GRANTSVILLE	3.3	3.2	2.1	2.2
SETTLEMENT CREEK	1.0	0.9	0.5	0.6
STRAWBERRY-ENLARGED	1105.9	974.8	977.0	637.8
UTAH LAKE	870.9	895.0	885.0	825.1
VERNON CREEK	0.6	0.6	0.3	---

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
PROVO RIVER & UTAH LAKE	7	46	64
PROVO RIVER	4	42	62
JORDAN RIVER & GSL	6	56	73
TOOELE & RUSH VALLEY WATE	3	41	60
UTAH LAKE/JORDAN R./TOOEL	16	50	67

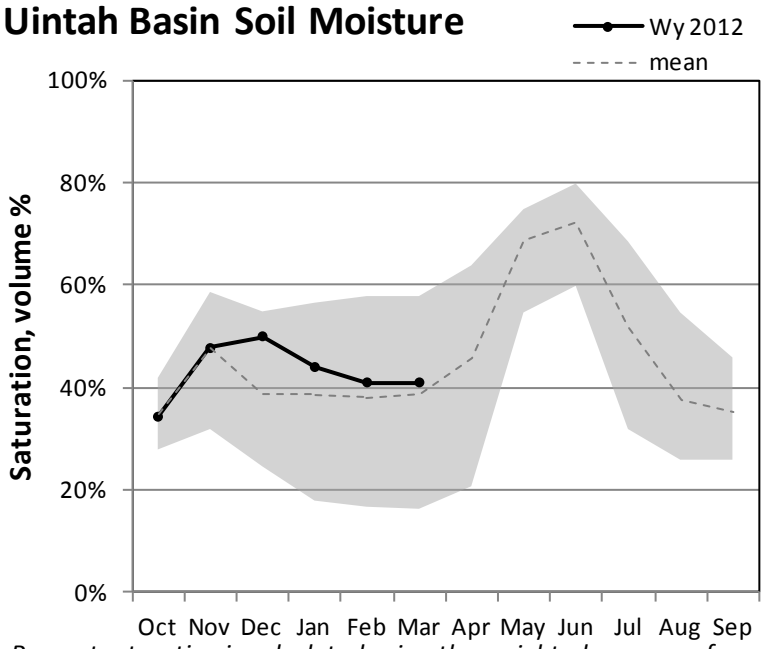
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

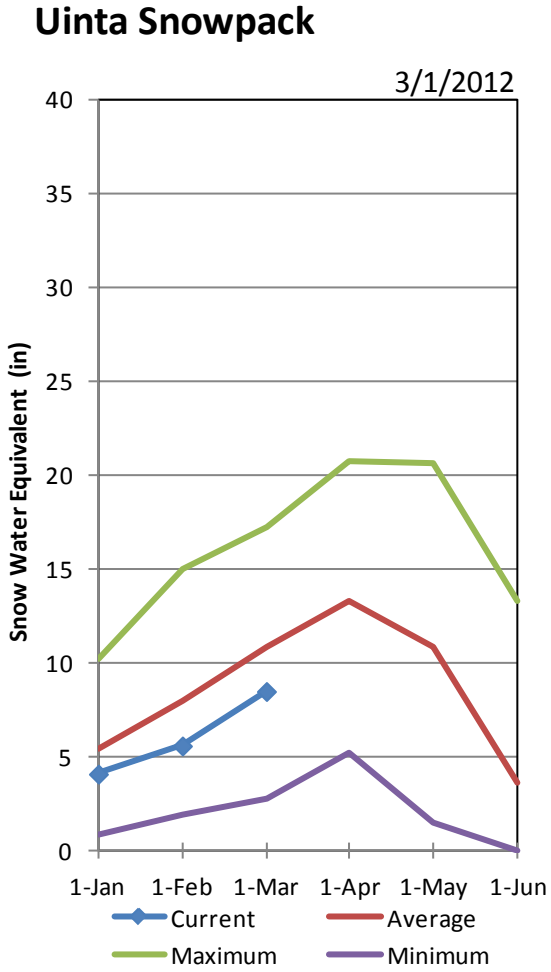
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.
(3) - Median value used in place of average.

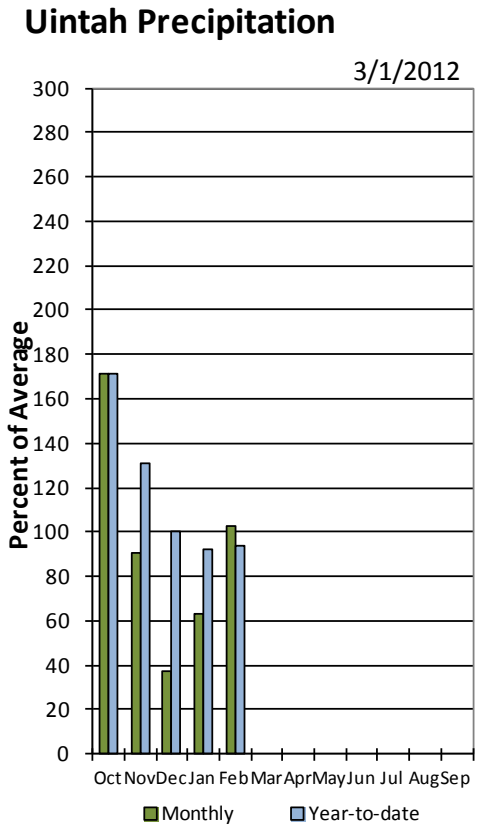
Uintah Basin and Dagget SCDs
March 1, 2012

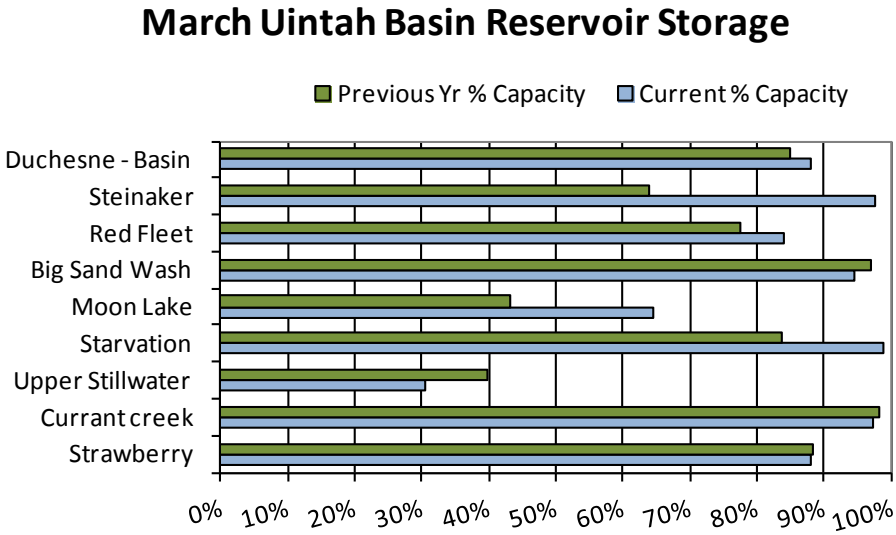
Snowpack across the Uintas is just below average at 78% which is 55% of last year. Percent of average snowpack for individual sites range from 71% to 141% on the North Slope and from 49% to 100% on the South Slope. Precipitation during February was average at 103% bringing the seasonal accumulation (Oct-Feb) to 94%. Soil moisture values in runoff producing area are at 41% of saturation in the upper 2 feet of soil compared to 55% last year. Reservoir storage is at 88% of capacity, 3% higher than at this time last year. Streamflow forecasts (April-July) range from 44% to 89% of average. The Surface Water Supply Index for the western and eastern area is 47% indicating near normal conditions on the west side and eastern area. General water supply conditions are near average.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

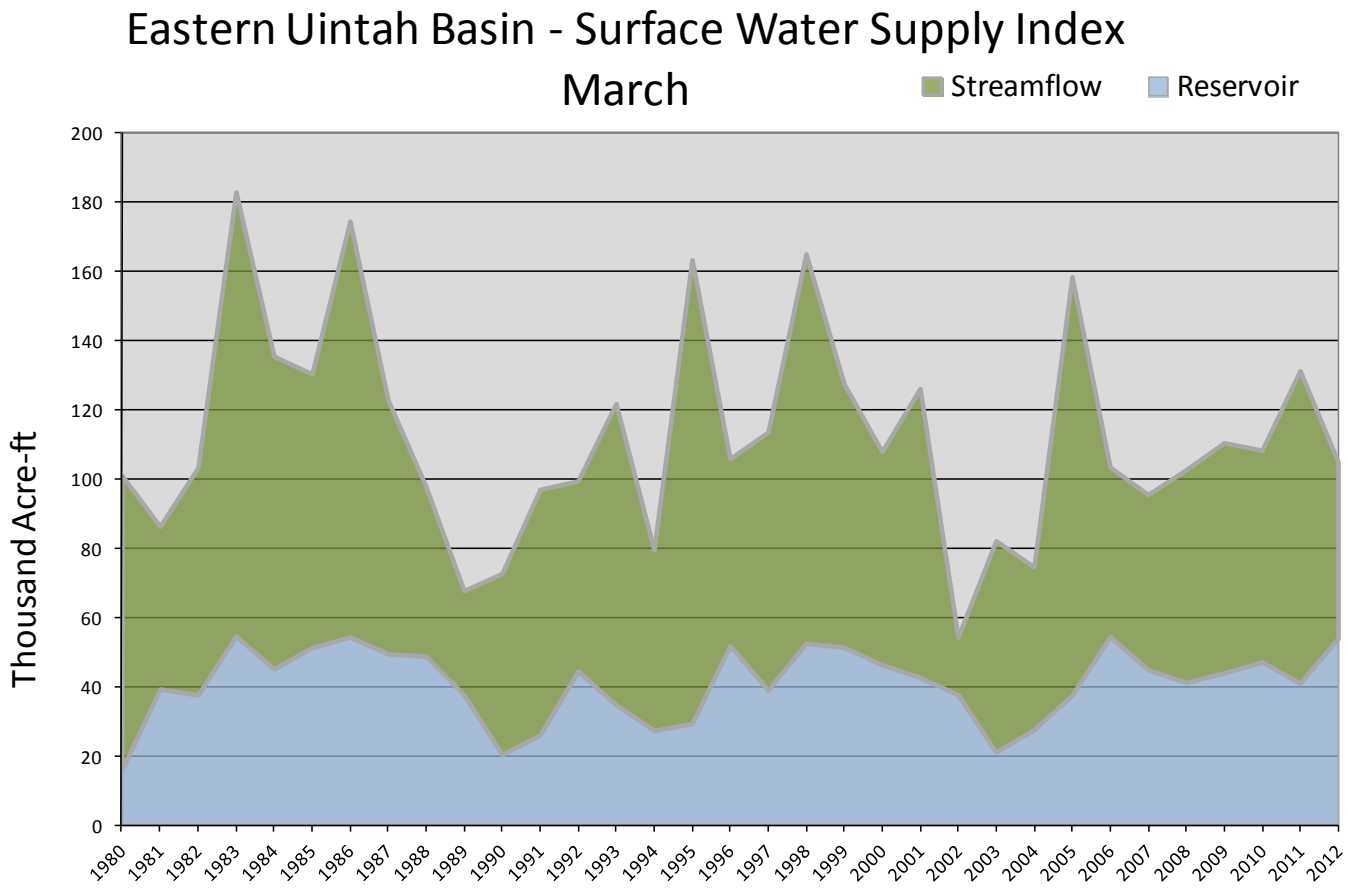






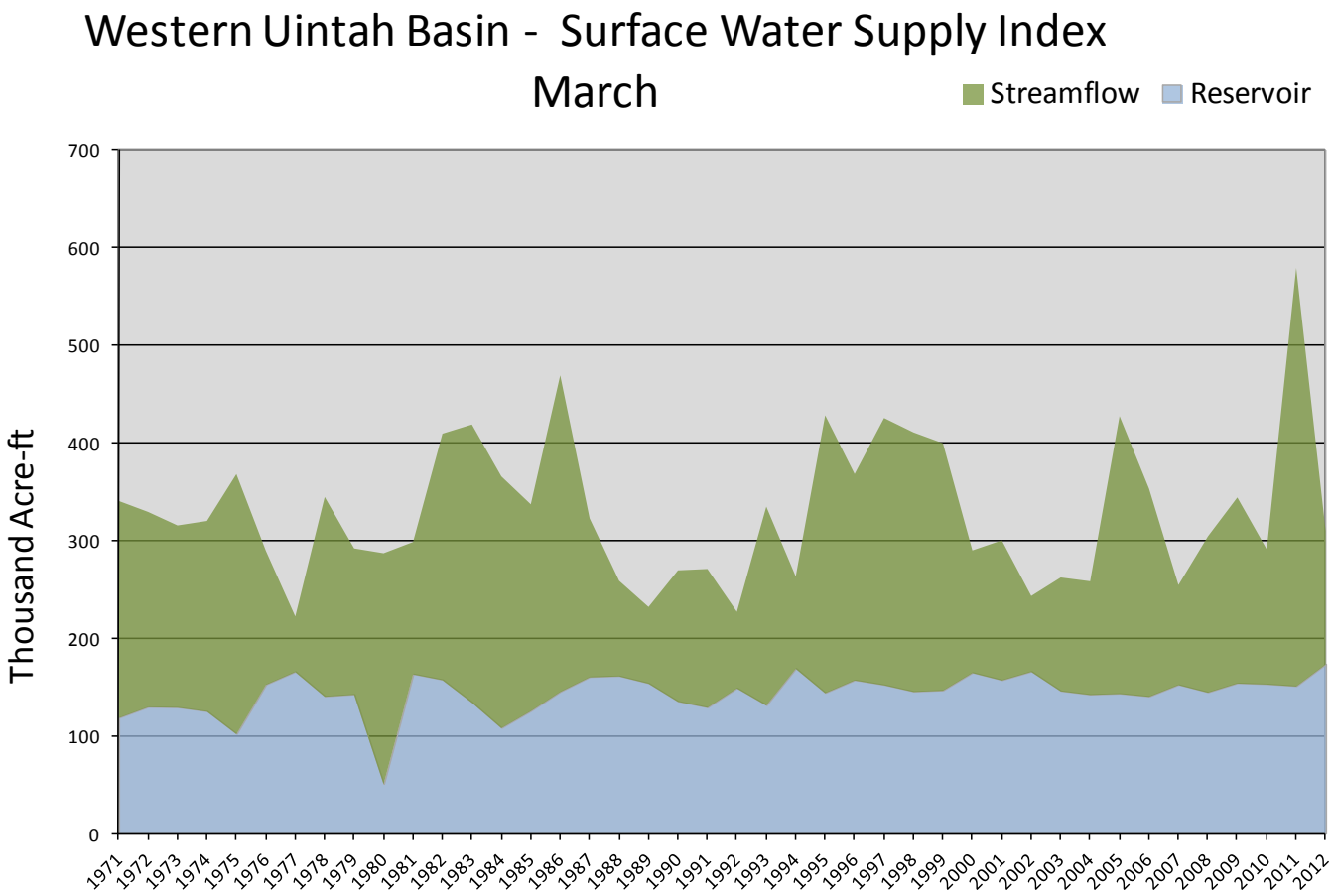
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Red Fleet & Steinaker	April-July Forecast Big Brush & Ashley Creek	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Eastern Uintah	**54.2**	**51.0**	**105.2**	**-0.25**	**47**	**82, 06, 96, 00**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Starvation & Upper Stillwater	April-July Forecast Rock Creek & Duchesne River	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Western Uintah	**174**	**137**	**311**	**-0.29**	**47**	**01, 08, 73, 74**

**EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



Uintah Basin & Dagget SCD's

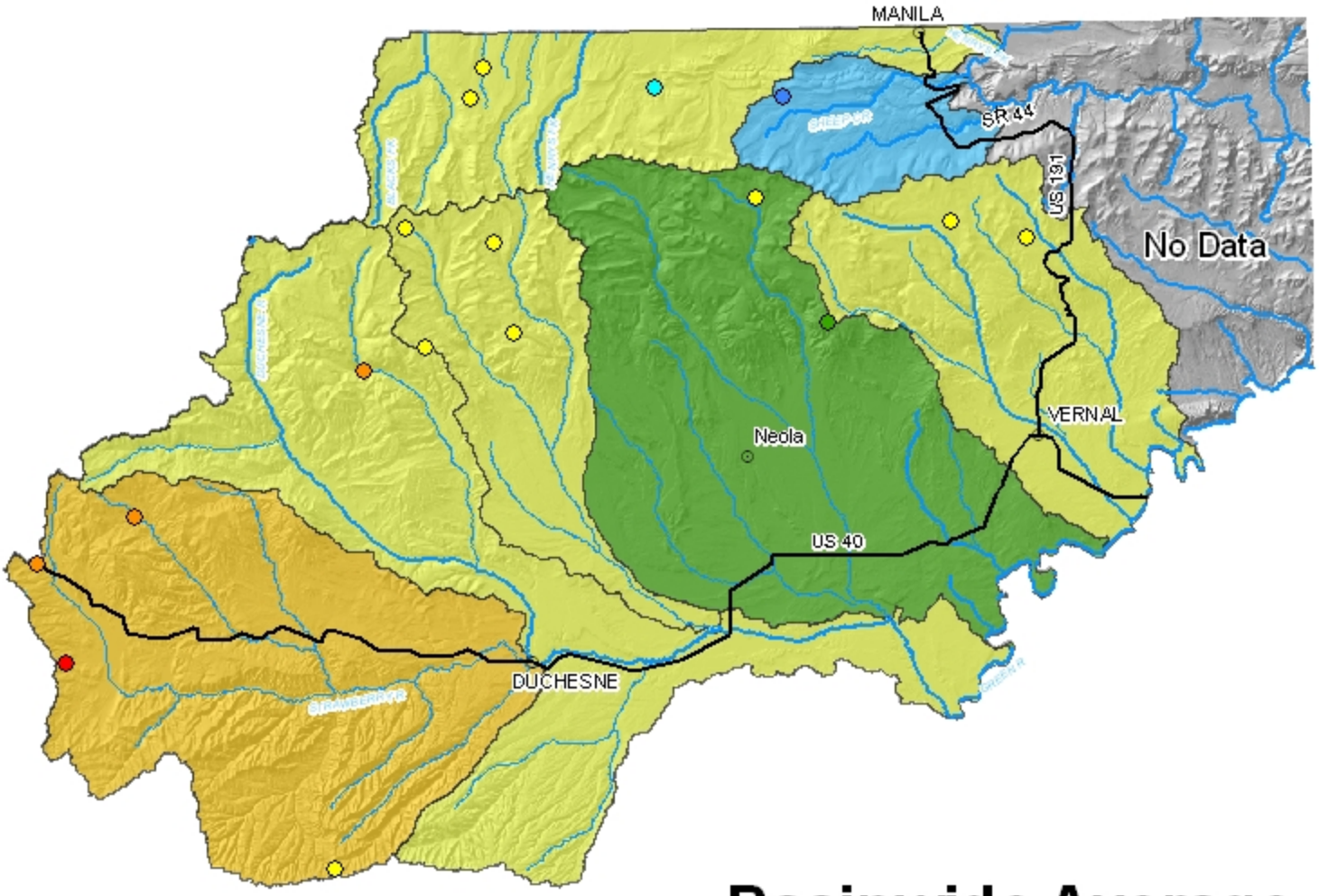
Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%

N



Basinwide Average
78 %

Provisional Data
Subject to Revision

Miles
0 5 10 20 30 40 50

UINTAH BASIN & DAGGET SCD'S as of March 1, 2012

UINTAH BASIN & DAGGET SCD'S
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Blacks Fk nr Robertson	APR-JUL	49	63	74	78	86	104	95
EF of Smiths Fork nr Robertson (2)	APR-JUL	13.4	18.3	22	76	26	33	29
Flaming Gorge Reservoir Inflow (2)	APR-JUL	585	790	945	79	1120	1390	1190
Big Brush Ck ab Red Fleet Reservoir	APR-JUL	9.7	13.3	16.0	76	19.0	24	21
Ashley Ck nr Vernal	APR-JUL	19.8	28	35	67	42	55	52
WF Duchesne R at VAT Diversion	APR-JUL	6.1	9.1	11.5	62	14.2	18.7	18.7
Duchesne R nr Tabiona (2)	APR-JUL	44	60	72	69	85	107	105
Upper Stillwater Reservoir Inflow (2	APR-JUL	41	49	55	67	61	71	82
Rock Ck nr Mountain Home (2)	APR-JUL	48	58	65	73	73	85	89
Duchesne R ab Knight Diversion (2)	APR-JUL	91	116	135	72	155	187	188
Strawberry R nr Soldier Springs (2)	APR-JUL	9.3	18.2	26	44	35	51	59
Currant Ck Reservoir Inflow (2)	APR-JUL	4.0	6.1	9.0	52	12.4	18.4	17.3
Strawberry R nr Duchesne (2)	APR-JUL	21	38	53	44	70	99	121
Lake Fork R ab Moon Lake Reservoir	APR-JUL	37	46	52	77	59	69	68
Yellowstone R nr Altonah	APR-JUL	33	42	49	79	56	68	62
Duchesne R at Myton (2)	APR-JUL	75	132	180	56	235	330	320
Uinta R bl Powerplant Diversion nr N	APR-JUL	40	50	64	81	79	98	79
Whiterocks R nr Whiterocks	APR-JUL	31	42	50	89	59	74	56
Duchesne R nr Randlett (2)	APR-JUL	71	147	215	57	295	435	380

UINTAH BASIN & DAGGET SCD'S
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
FLAMING GORGE	3749.0	3293.0	3104.0	2919.0
MOON LAKE	49.5	23.1	15.5	29.8
RED FLEET	25.7	21.6	19.9	18.4
STEINAKER	33.4	32.6	21.3	22.8
STARVATION	165.3	163.6	138.1	135.9
STRAWBERRY-ENLARGED	1105.9	974.8	977.0	637.8

UINTAH BASIN & DAGGET SCD'S
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER GREEN RIVER in UTAH	6	77	94
ASHLEY CREEK	2	57	75
BLACK'S FORK RIVER	2	76	87
SHEEP CREEK	1	91	141
DUCHESNE RIVER	11	48	72
LAKE FORK-YELLOWSTONE CRE	4	49	79
STRAWBERRY RIVER	4	40	58
UINTAH-WHITEROCKS RIVERS	2	65	94
UINTAH BASIN & DAGGET SCD	17	55	78

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

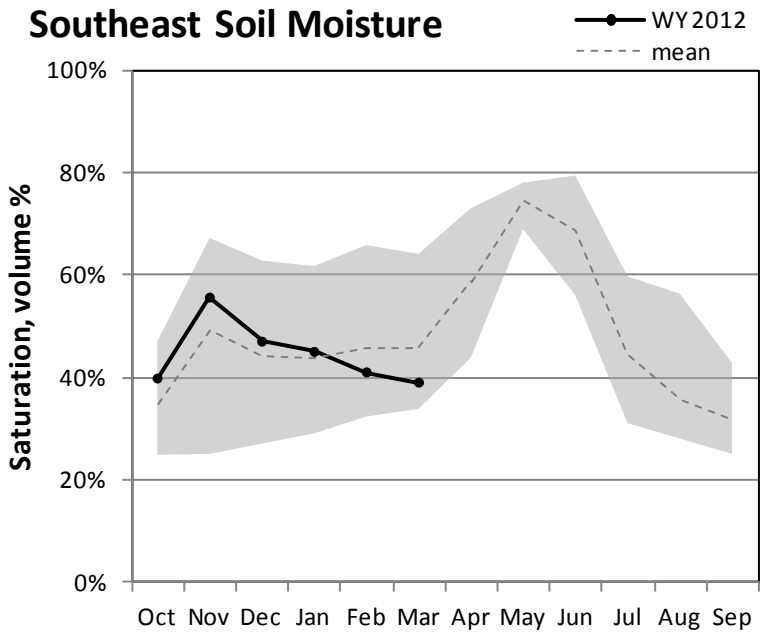
The average is computed for the 1971-2000 base period.

(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.
(3) - Median value used in place of average.

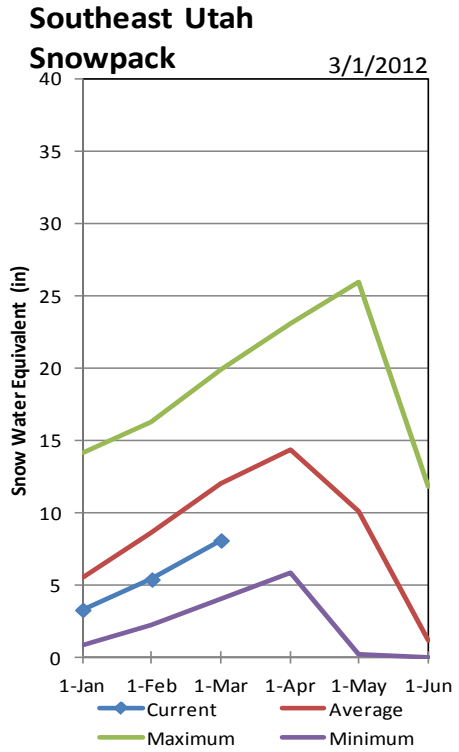
Southeast - Carbon, Emery, Wayne, Grand and San Juan Counties

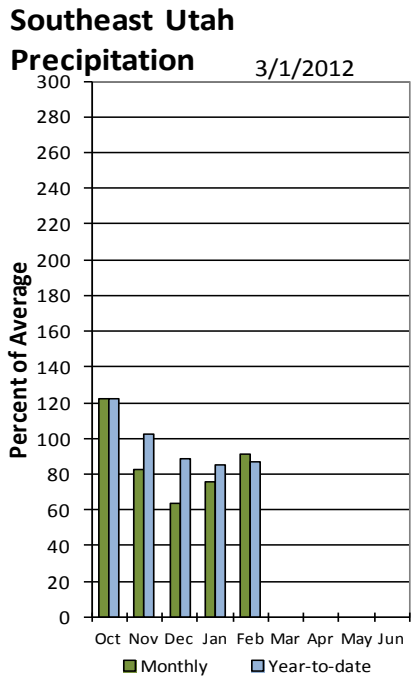
March 1, 2012

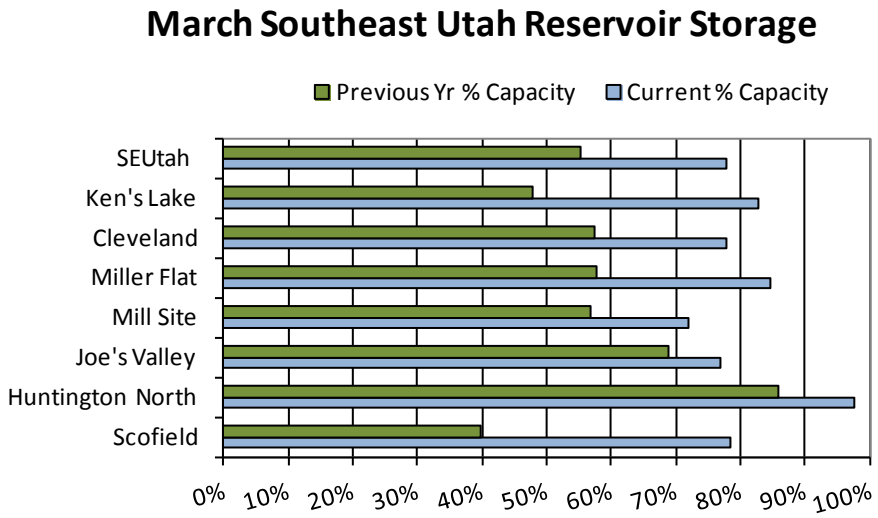
Snowpacks in this region are much below normal at 62% of average, about 51% of last year. Percent of average snowpack for individual sites range from 35% at Fish Lake to 100% at Donkey Reservoir SNOTEL stations. Precipitation during February was near average at 91%, bringing the seasonal accumulation (Oct-Feb) to 87% of normal. Soil moisture estimates in runoff producing areas are at 39% of saturation in the upper 2 feet of soil, compared to 64% last year at this time. Forecast streamflows (April-July) range from 48% to 79% of average. Reservoir storage is at 78% of capacity, 23% higher than last year at this time. Surface Water Supply Indices for the area are: Price 62%, Joe's Valley 40%, Ferron Creek 37%, and Moab 62%. General runoff and water supply conditions are near average in the Joe's Valley area, below average in the Ferron Creek area, and above average in the Price and Moab areas.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

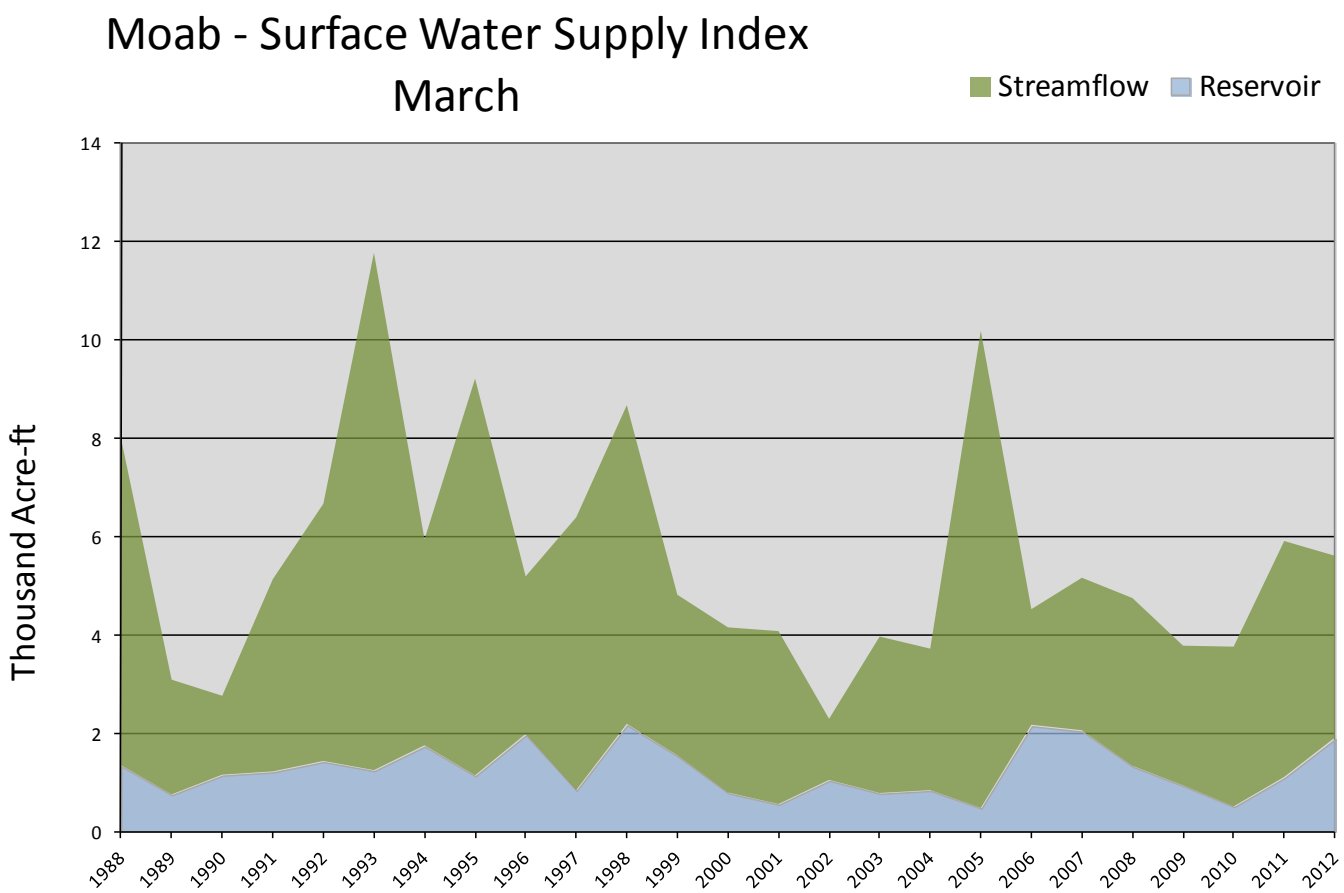






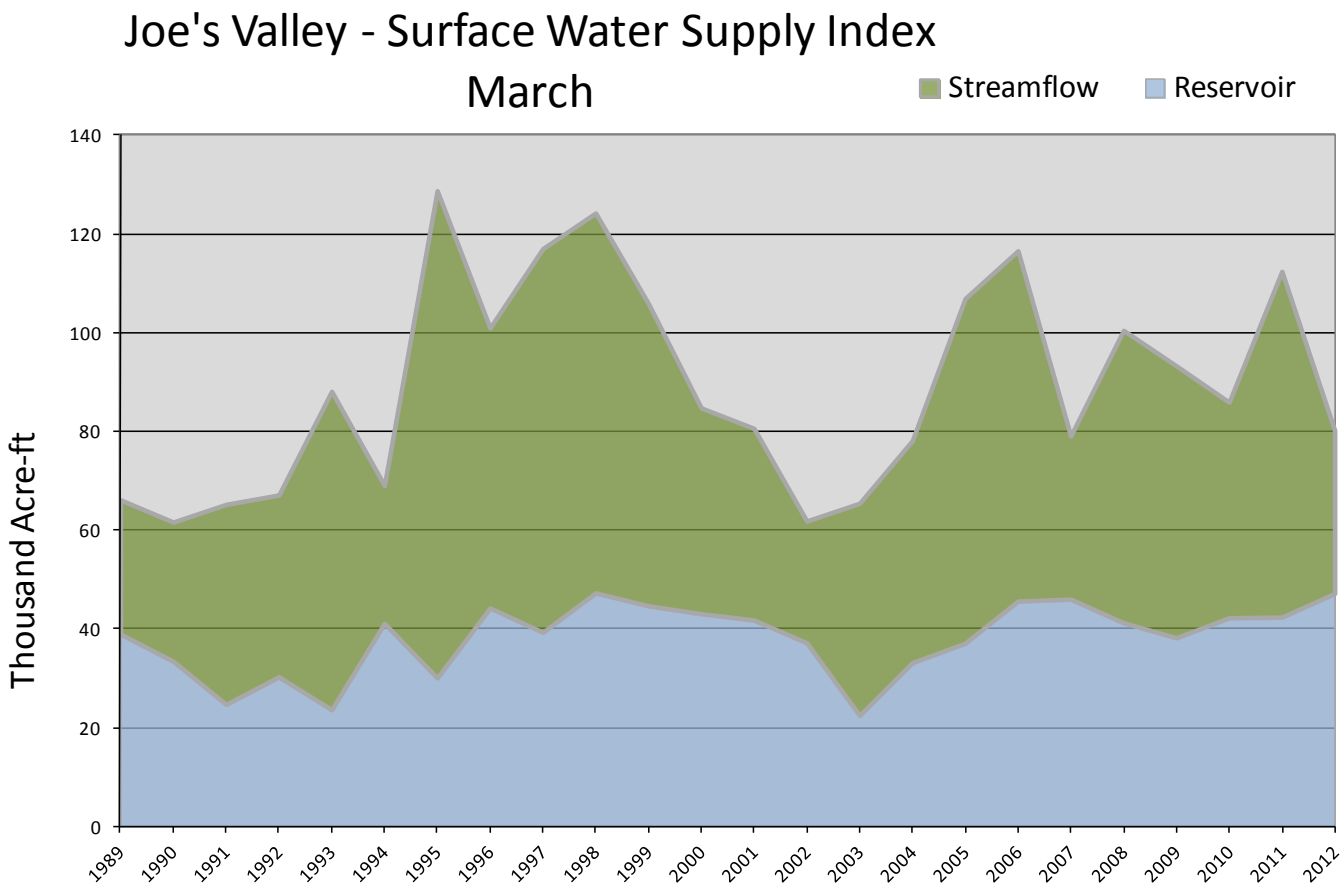
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Ken's Lake Reservoir	April-July Forecast Mill Creek at Sheley	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Moab	**1.9**	**3.7**	**5.6**	**0.96**	**62**	**07, 96, 11, 94**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



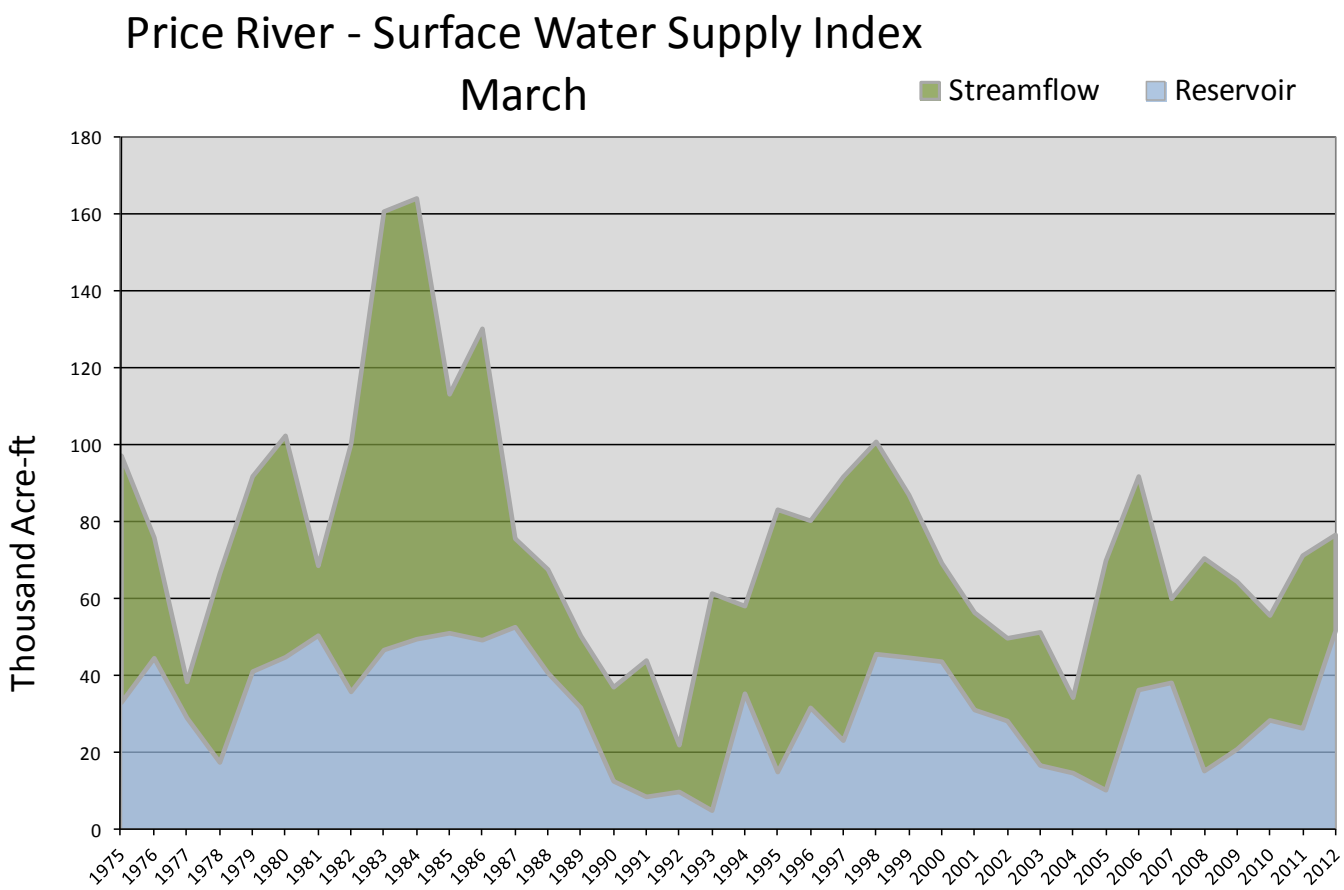
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Joe's Valley	April-July Forecast Inflow to Joe's Valley	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Joe's Valley	**47.3**	**33.0**	**80.3**	**-0.83**	**40**	**04, 07, 01, 00**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



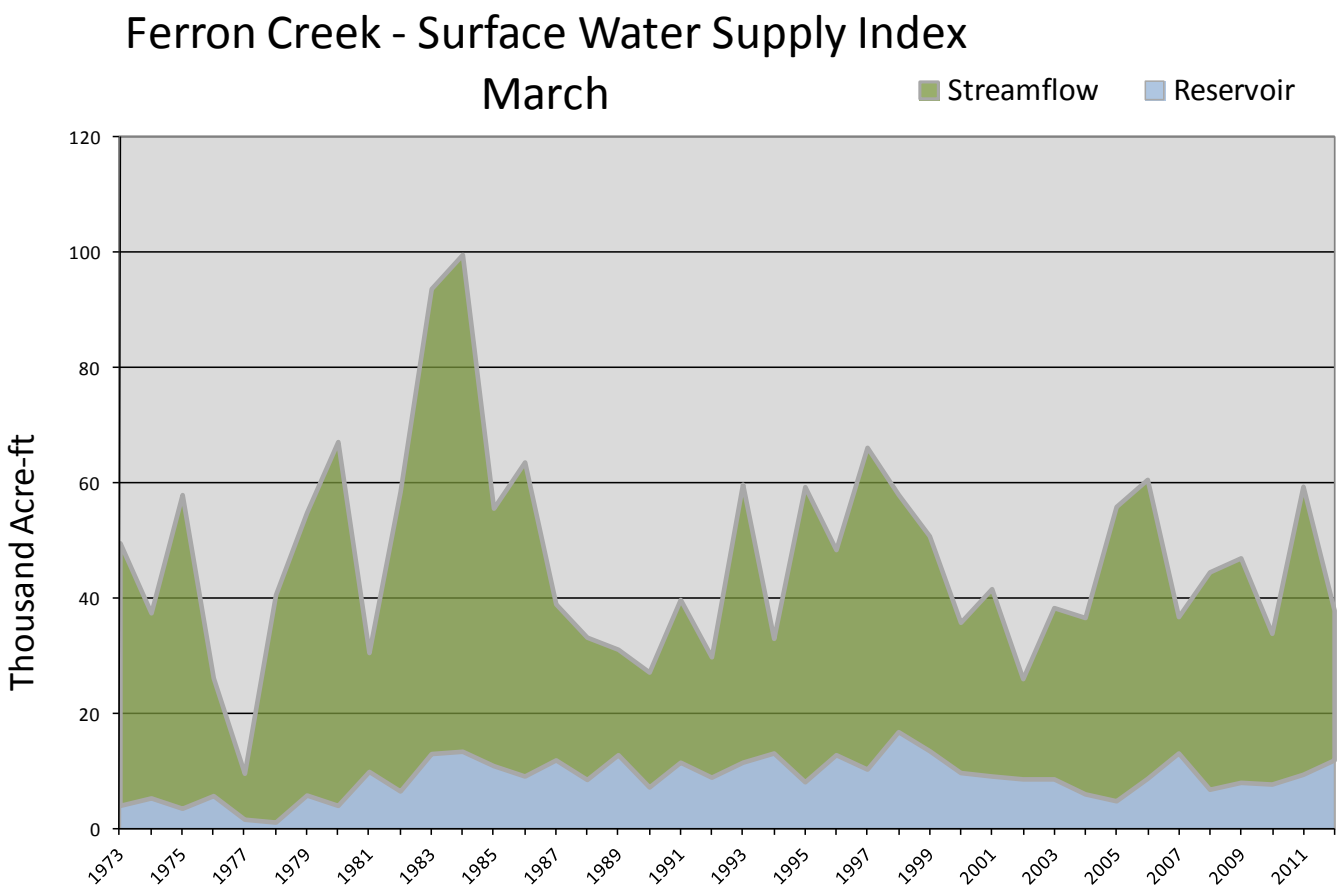
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Scofield Reservoir	April-July Forecast Scofield	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Price River	**51.6**	**25.0**	**76.6**	**0.96**	**62**	**87, 76, 96, 95**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Millsite Reservoir	April-July Forecast Ferron creek	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Ferron Creek	**12.0**	**26.0**	**38.0**	**-1.12**	**37**	**07, 74, 03, 87**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



Carbon, Emery, Wayne Grand & San Juan Basins

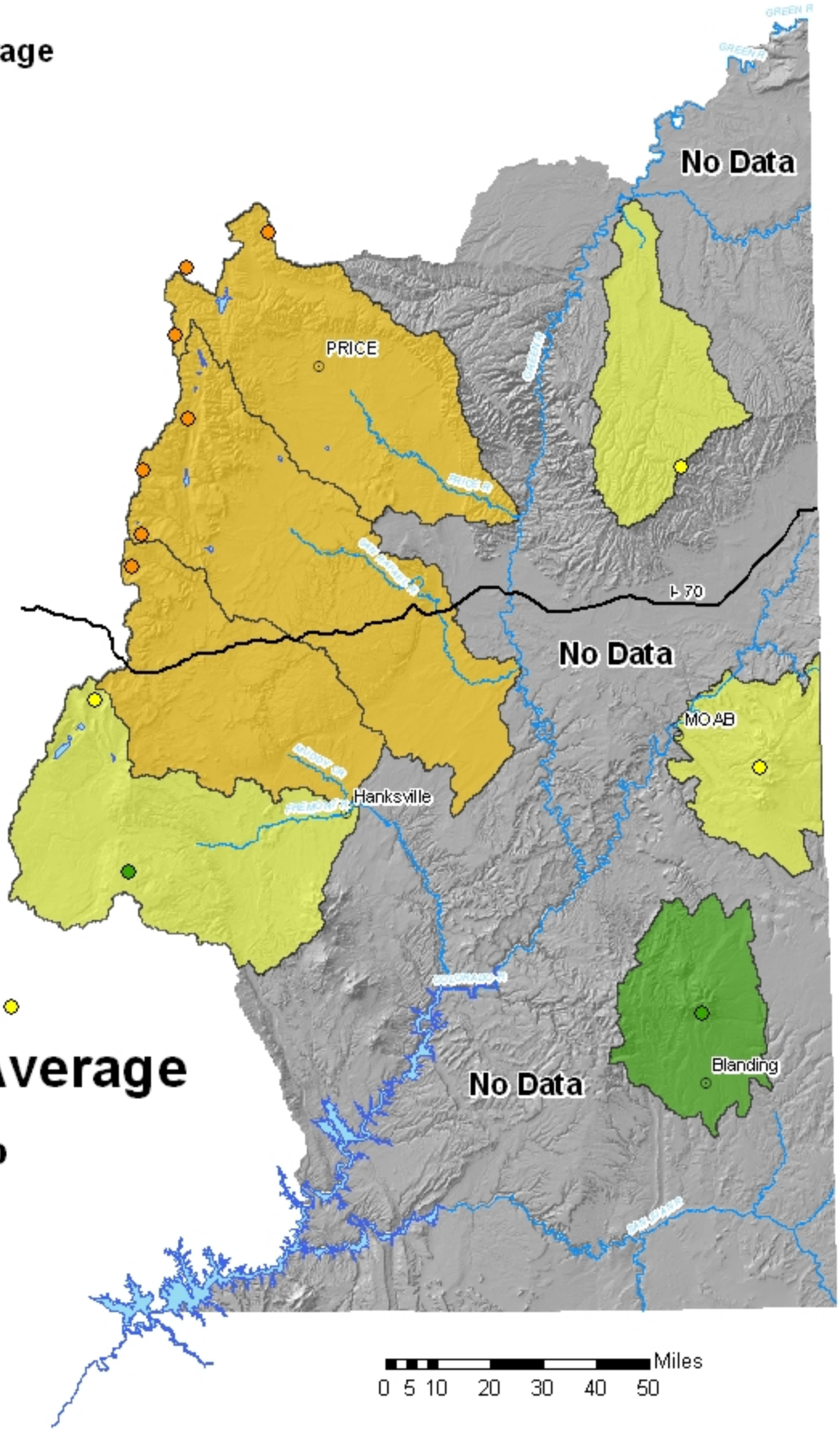
N

Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%



Basinwide Average

68 %

Provisional Data Subject to Revision

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Fish Creek ab Reservoir nr Scofield	APR-JUL	10.0	15.0	19.0	59	23	31	32
Price R nr Scofield Reservoir (2)	APR-JUL	14.8	20	25	56	30	39	45
White R bl Tabbyune Ck	APR-JUL	4.6	7.0	9.0	52	11.2	14.8	17.3
Green R at Green River, UT (2)	APR-JUL	1270	1860	2330	74	2850	3500	3170
Electric Lake Inflow (2)	APR-JUL	4.3	6.1	7.5	48	9.1	11.6	15.7
Huntington Ck nr Huntington (2)	APR-JUL	13.4	19.9	25	51	31	40	49
Joe's Valley Reservoir Inflow (2)	APR-JUL	17.1	26	33	57	41	54	58
Ferron Ck (Upper Station) nr Ferron	APR-JUL	16.2	22	26	67	31	38	39
Seven Mile Ck nr Fish Lake	APR-JUL	2.90	4.40	5.50	79	6.80	8.90	7.00
Colorado R nr Cisco (2)	APR-JUL	2100	2640	3200	69	3810	4820	4650
Mill Ck at Sheley Tunnel nr Moab	APR-JUL	2.20	3.00	3.70	74	4.50	5.80	5.00
Muddy Ck nr Emery	APR-JUL	6.2	9.4	12.0	60	14.9	19.6	19.9
Pine Ck nr Escalante	APR-JUL	0.30	0.84	1.36	57	2.00	3.20	2.40
South Ck ab Lloyd's Res nr Monticell	MAR-JUL	0.35	0.64	0.90	65	1.23	1.85	1.38
San Juan R nr Bluff (2)	APR-JUL	595	800	960	78	1130	1410	1230

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
HUNTINGTON NORTH	4.2	4.1	3.6	3.4
JOE'S VALLEY	61.6	47.3	43.4	41.5
KEN'S LAKE	2.3	1.9	1.1	1.3
MILL SITE	16.7	12.0	9.5	8.4
SCOFIELD	65.8	51.6	26.2	34.8

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
PRICE RIVER	3	47	61
SAN RAFAEL RIVER	3	52	58
MUDDY CREEK	1	48	60
FREMONT RIVER	3	71	82
LASAL MOUNTAINS	1	88	82
BLUE MOUNTAINS	1	73	91
WILLOW CREEK	1	45	75
SOUTHEASTERN UTAH	13	56	68

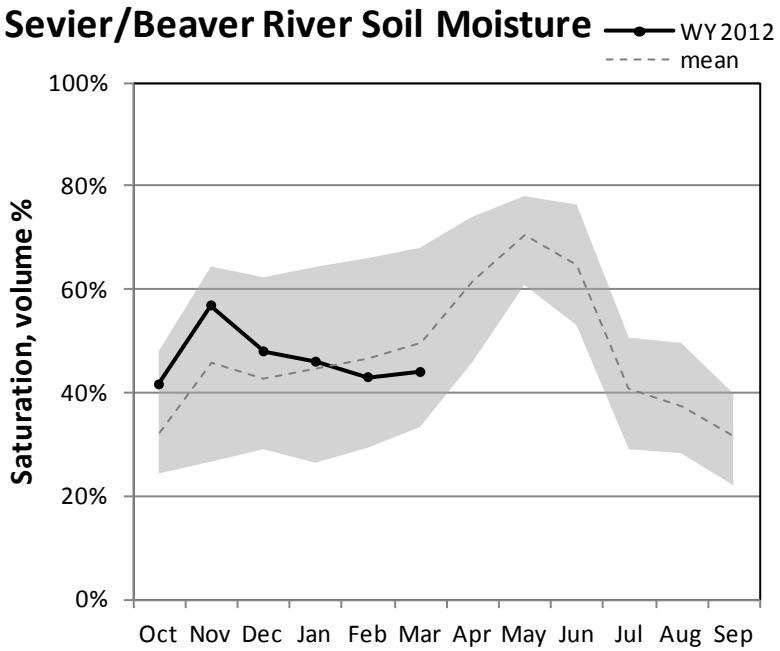
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

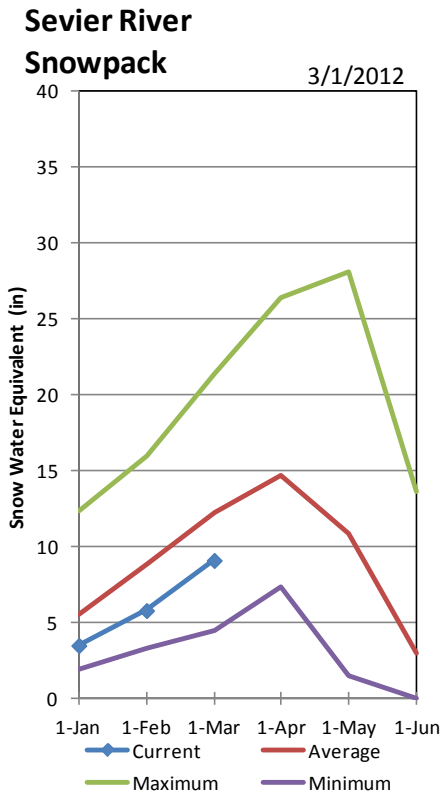
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.
(3) - Median value used in place of average.

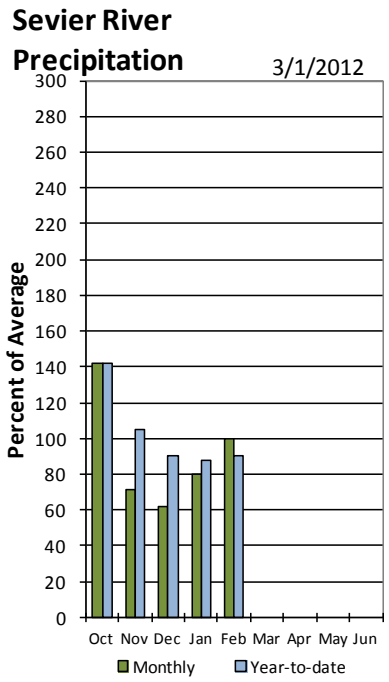
Sevier and Beaver River Basins
March 1, 2012

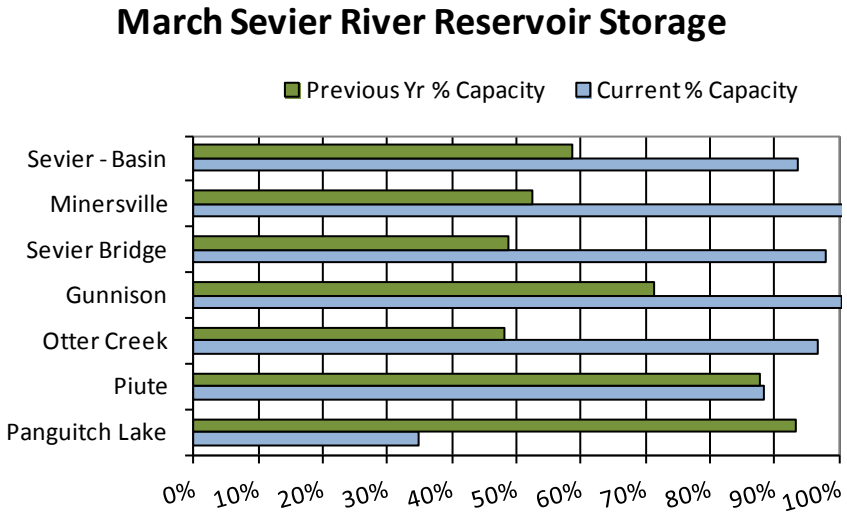
Snowpack on the Sevier River Basin is below normal at 71% of average, about 55% of last year. Individual sites range from 47% at Squaw Springs to 100% of average at Farnsworth Lake. Precipitation during February was near average at 100% of normal, bringing the seasonal accumulation (Oct-Feb) to 90% of average. Soil moisture estimates in runoff producing areas are at 44% of saturation in the upper 2 feet of soil compared to 62% last year. Streamflow forecasts range from 49% to 77% of average. Reservoir storage is at 93% of capacity, compared to 59% last year. Surface Water Supply Indices are: Upper Sevier 44%, Lower Sevier 75% and Beaver 52%. Runoff conditions are poor, reservoir storage is excellent.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

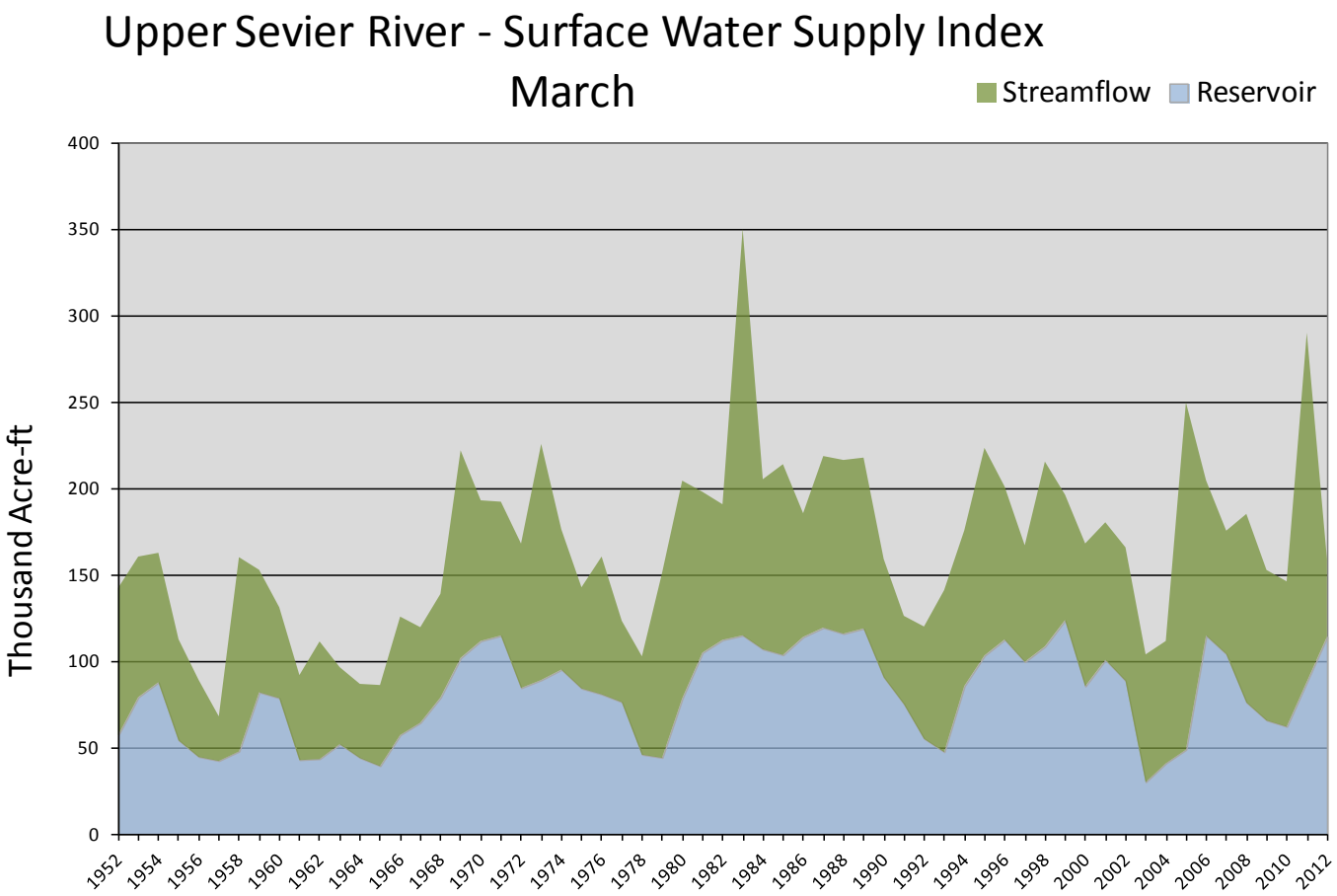






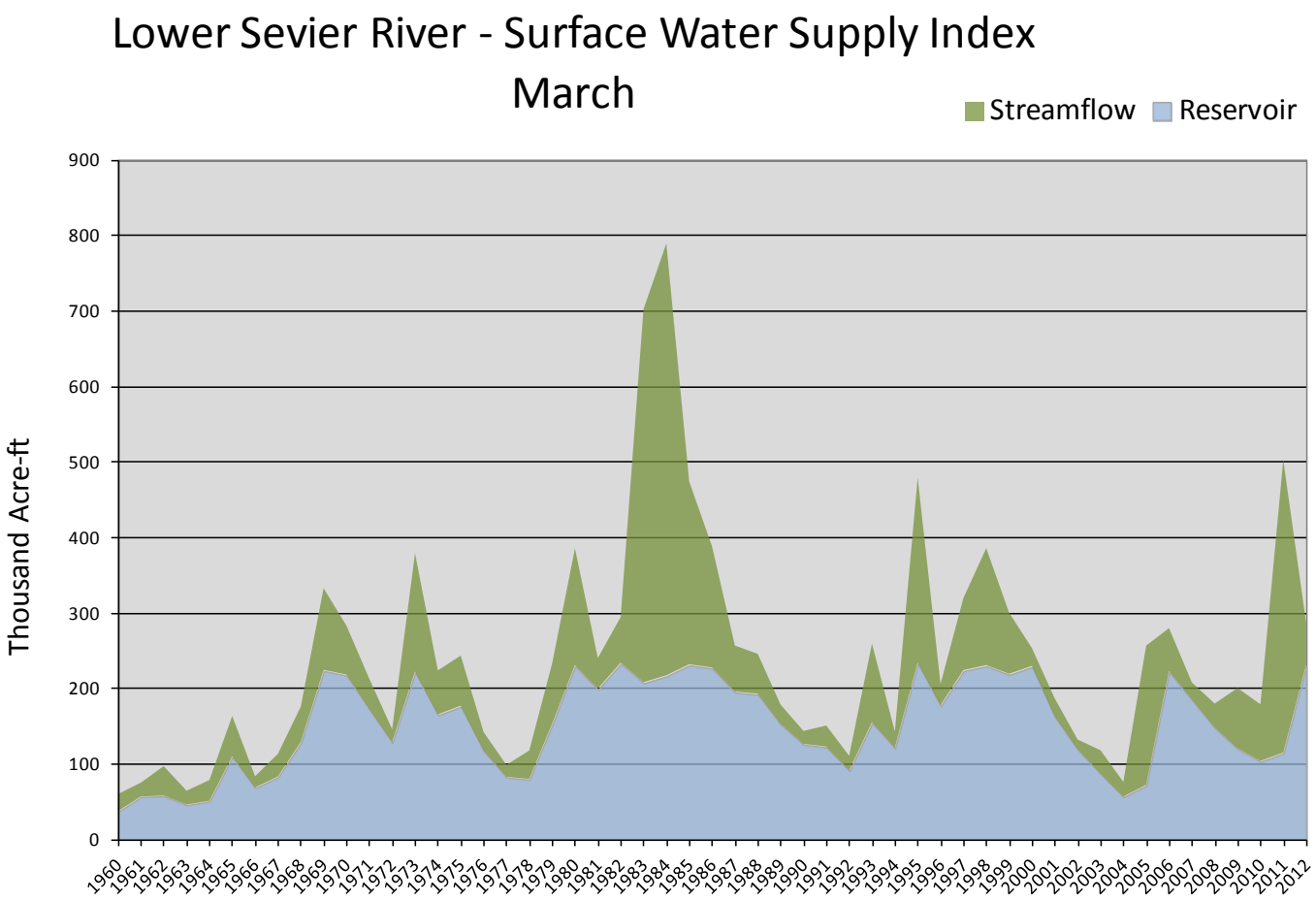
March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Piute & Otter Creek Reservoir	April-July Forecast Inflow to Piute Reservoir	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Upper Sevier	**114.2**	**45**	**159**	**-0.54**	**44**	**59,90,58,53**

**EOM, end of month; #SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



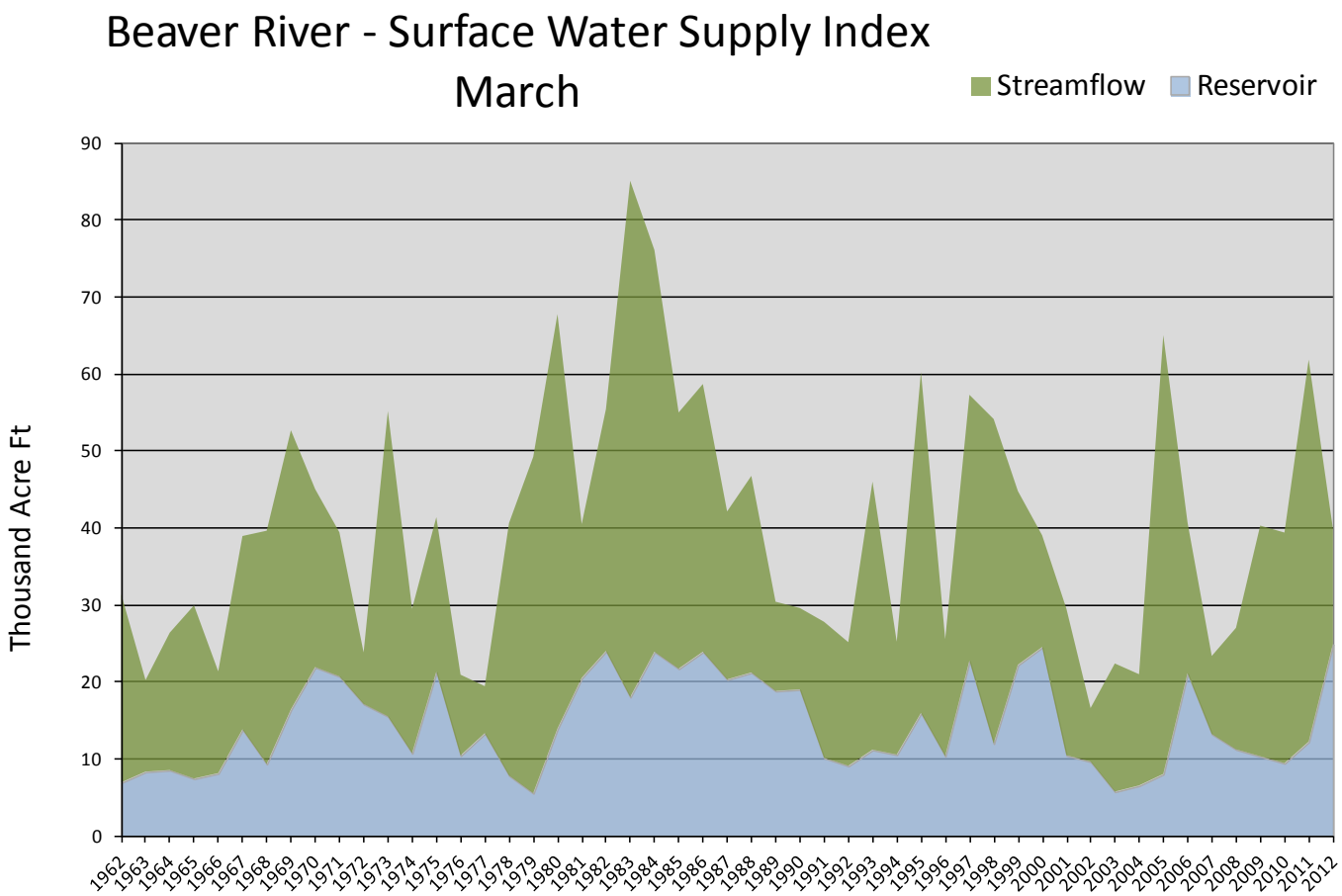
March 1, 2012	**Lower Sevier Surface Water Supply Index**					
Basin or Region	February EOM* Sevier Bridge Reservoir	April-July Forecast Inflow to Sevier Bridge Reservoir	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Lower Sevier	**114.8**	**195**	**310**	**2.44**	**79**	**69,97,99,73**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*

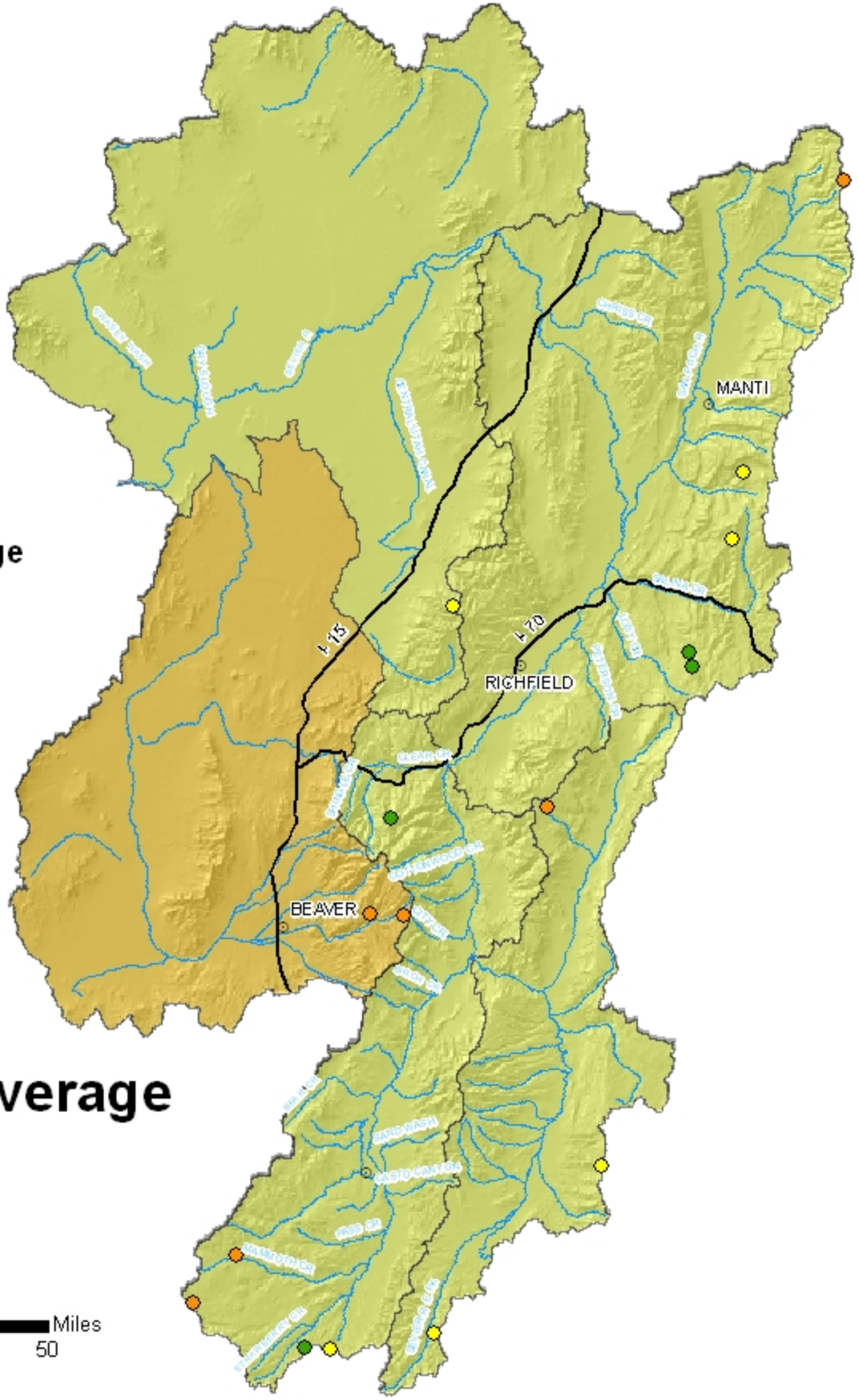


March 1, 2012	**Beaver Surface Water Supply Index**					
Basin or Region	February EOM* Minersville Reservoir	April-July forecast Beaver River at Beaver	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Beaver	**24.9**	**15.0**	**39.9**	**0.16**	**52**	**71,68,09,81**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



Sevier & Beaver Basins



Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%

Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Basinwide Average
75 %

0 5 10 20 30 40 50 Miles

Provisional Data
Subject to Revision

SEVIER & BEAVER RIVER BASINS as of March 1, 2012

SEVIER & BEAVER RIVER BASINS
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Mammoth Ck nr Hatch	APR-JUL	0.5	3.1	15.0	58	31	49	26
Sevier R at Hatch	APR-JUL	7.5	20	29	53	38	51	55
Sevier R nr Kingston	APR-JUL	0.3	6.3	18.0	55	33	55	33
EF Sevier R nr Kingston	APR-JUL	3.9	17.6	27	77	36	50	35
Sevier R bl Piute Dam	APR-JUL	2.6	24	45	68	66	98	66
Clear Ck ab Diversions nr Sevier	APR-JUL	1.5	8.4	13.0	59	17.6	24	22
Salina Ck nr Emery	APR-JUL	0.18	2.60	5.20	58	7.80	11.50	9.00
Salina Ck at Salina	APR-JUL	0.5	4.7	10.0	51	17.3	32	19.7
Manti Ck Blw Dugway Ck Nr Manti	APR-JUL	6.1	8.8	11.0	60	13.4	17.4	18.3
Sevier R nr Gunnison	APR-JUL	4.0	35	56	53	77	107	106
Chicken Ck nr Levan	APR-JUL	0.77	1.50	2.20	49	3.10	4.80	4.50
Oak Creek nr Oak City	APR-JUL	0.42	0.68	0.90	54	1.15	1.56	1.66
Beaver R nr Beaver	APR-JUL	0.5	9.1	15.0	56	21	29	27
Minersville Res Inflow	APR-JUL	1.9	5.5	9.5	57	15.1	27	16.6

SEVIER & BEAVER RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GUNNISON	20.3	20.4	14.5	14.6
MINERSVILLE (RkyFd)	23.3	24.9	12.2	16.2
OTTER CREEK	52.5	50.7	25.2	40.0
PIUTE	71.8	63.5	63.0	53.3
SEVIER BRIDGE	236.0	230.9	114.8	175.6
PANGUITCH LAKE	22.3	7.8	20.8	146.8

SEVIER & BEAVER RIVER BASINS
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER SEVIER RIVER	8	50	74
EAST FORK SEVIER RIVER	3	56	73
SOUTH FORK SEVIER RIVER	5	46	75
LOWER SEVIER RIVER	6	70	79
BEAVER RIVER	2	44	63
SEVIER & BEAVER RIVER BAS	16	56	75

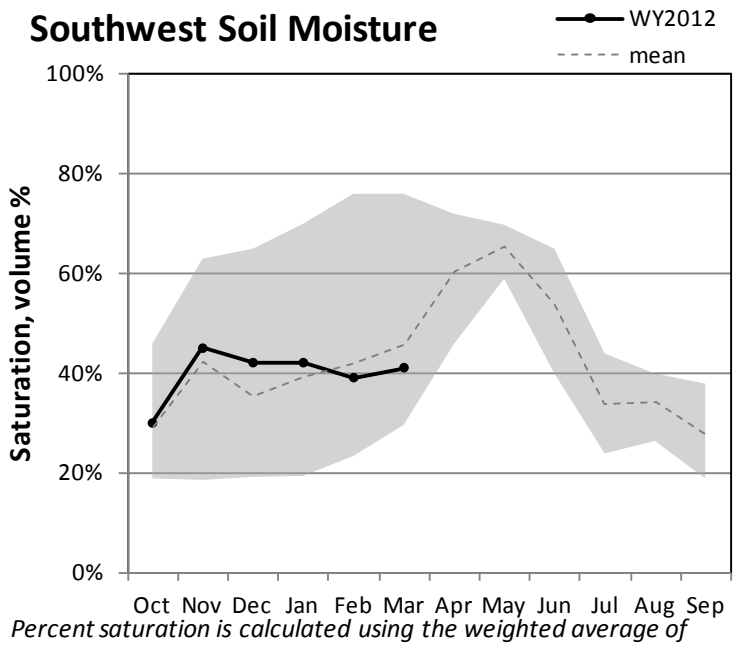
* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

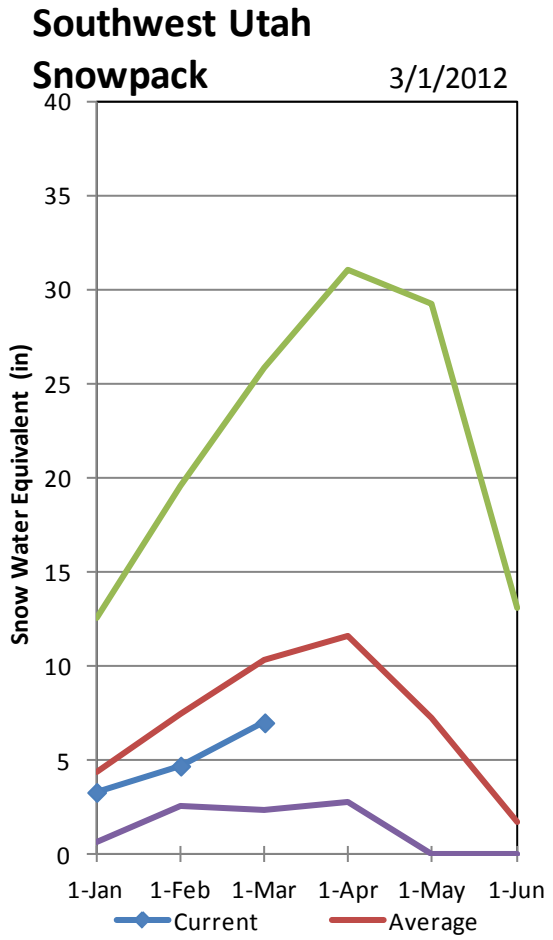
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.
(3) - Median value used in place of average.

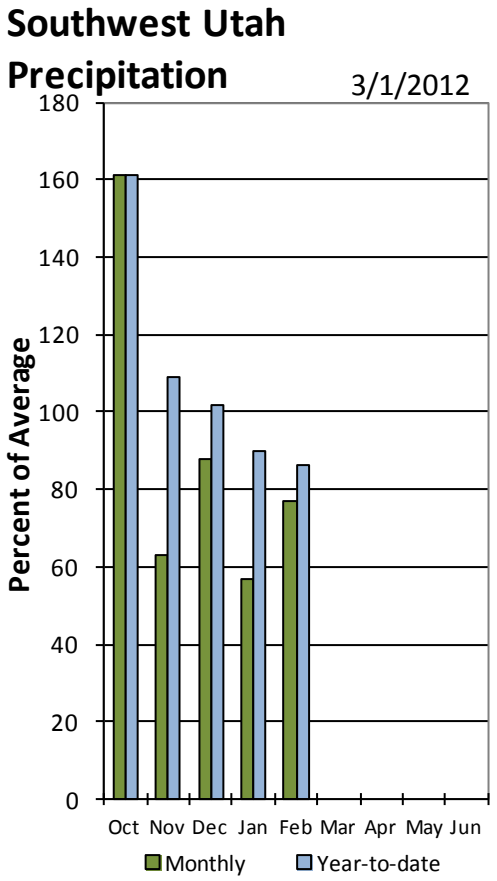
E. Garfield, Kane, Washington, & Iron Co.
February 1, 2012

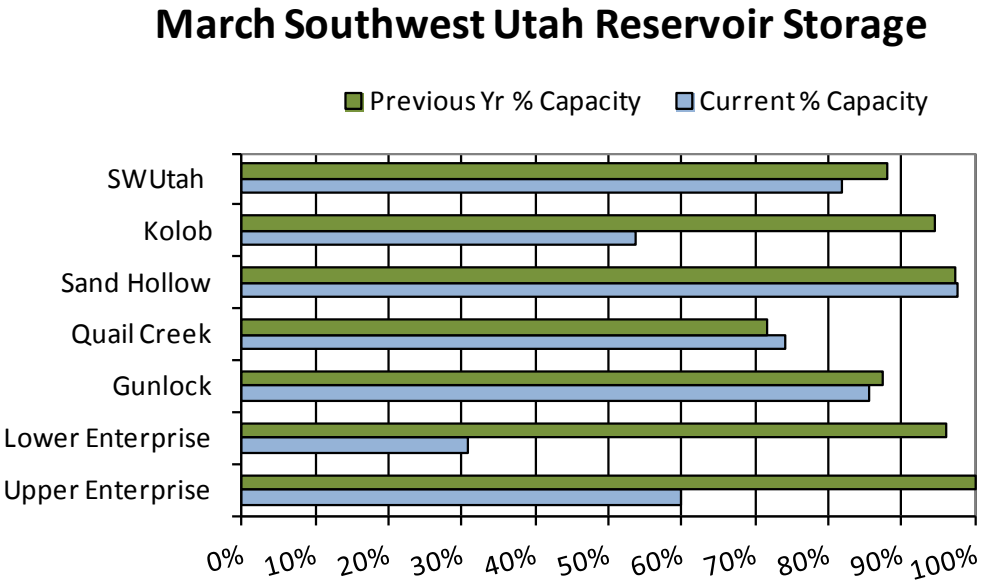
Snowpack in this region are below average at 77% of average, which is 51% of last year. Individual sites range from 10% at Little Grassy Snotel, to 101% of average at Birch Crossing. Precipitation during the month of February was below average at 77%, bringing the seasonal accumulation (Oct-Feb) to 86% of average. The average soil moisture estimate in runoff producing areas is at 41% of saturation within the upper 2 feet of soil, compared to 56% last year. Forecast streamflows (Apr–July) range from 41% to 67% of average. Reservoir storage is at 82% of capacity, 6% lower than last year at this time. The Surface Water Supply Index is at 30%, indicating much below average water supply conditions.



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

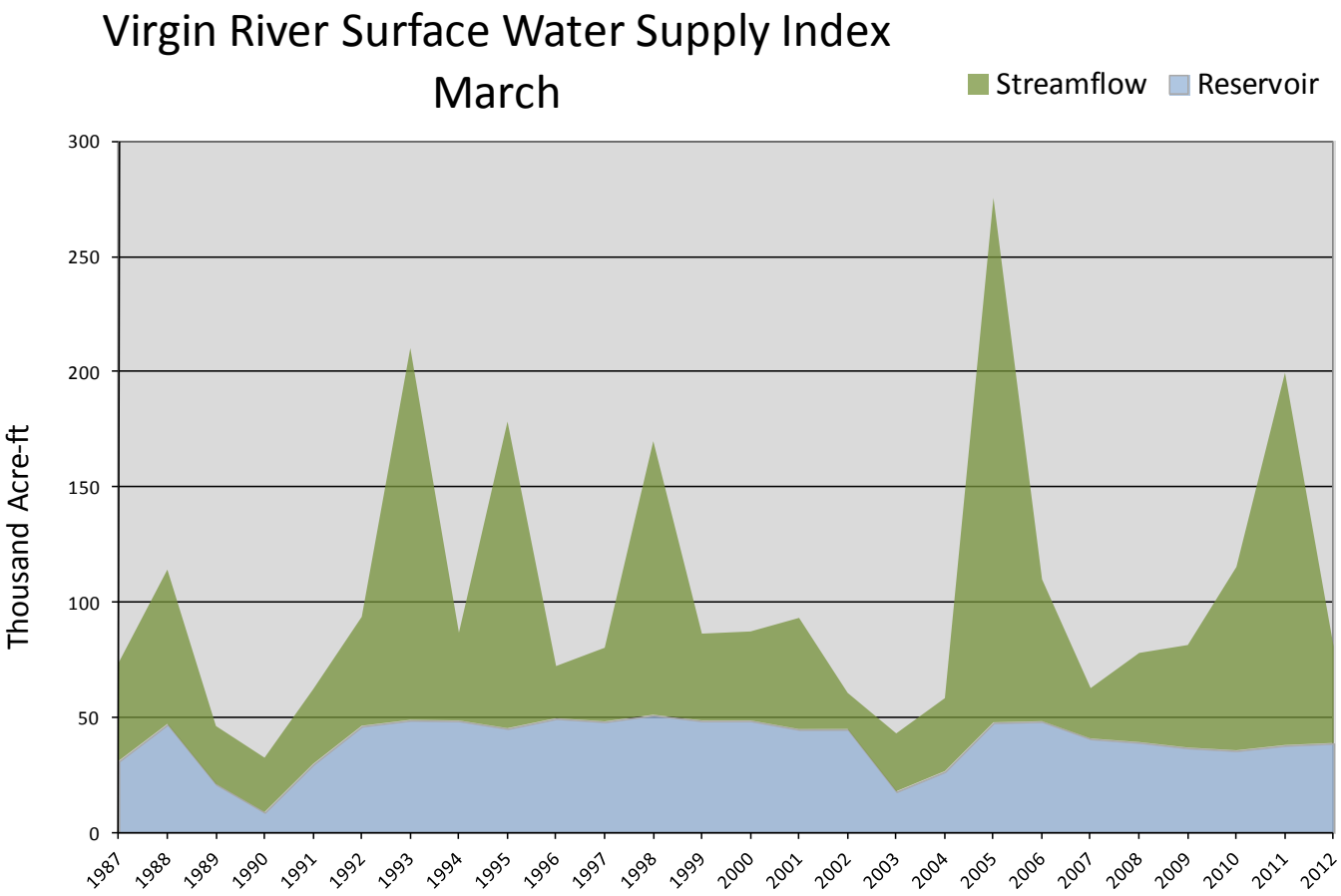






March 1, 2012	**Surface Water Supply Index**					
Basin or Region	February EOM* Quail Creek and Gunlock Reservoirs	April-July forecast Virgin and Santa Clara Rivers	Reservoir + Streamflow	SWSI#	Percentile	Years with similar SWSI
	*KAF^*	*KAF*	*KAF*		*%*	
Virgin River	**38.6**	**42**	**81**	**-0.46**	**44**	**08, 97, 09, 99**

**EOM, end of month; # SWSI, Surface Water Supply Index; ^KAF, thousand acre-feet.*



E. Garfield, Kane, Washington & Iron County

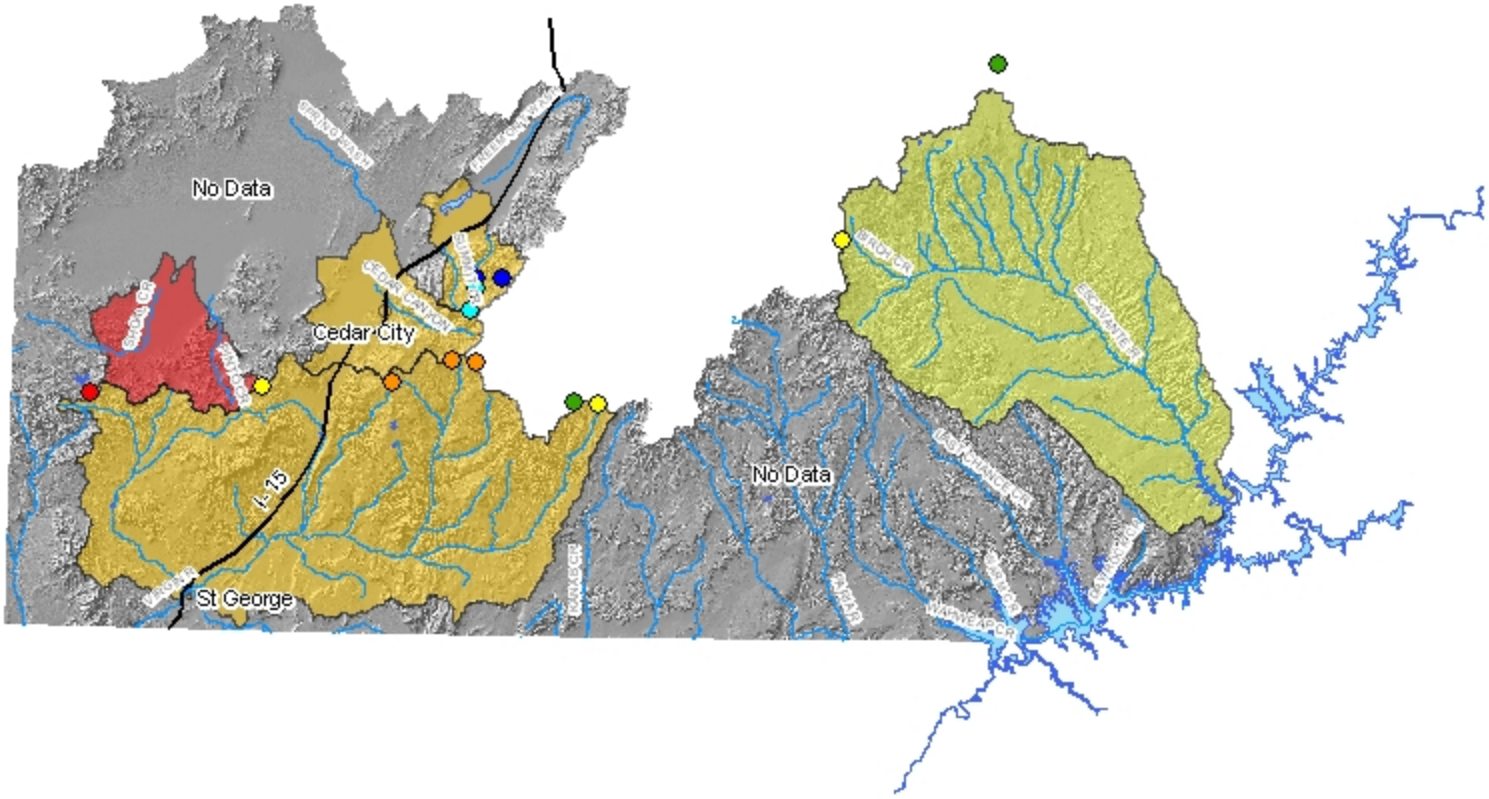
Watershed % of Average

- 0
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >150%

Snotel % of Average

- < 50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- > 150%

N



Basin Average
67 %

Provisional Data
Subject to Revision

Miles
0 5 10 20 30 40 50

E. GARFIELD, KANE, WASHINGTON, & IRON Co. as of March 1, 2012

E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Lake Powell Inflow (2)	APR-JUL	3200	4160	5300	67	6580	8200	7930
Virgin R at Virgin	APR-JUL	21	25	32	50	40	54	64
Virgin R nr Hurricane	APR-JUL	16.0	19.6	28	41	38	55	69
Santa Clara R nr Pine Valley	APR-JUL	1.10	1.80	2.50	46	3.30	4.70	5.50
Coal Ck nr Cedar City	APR-JUL	1.2	6.4	10.0	52	13.6	18.8	19.3

E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GUNLOCK	10.4	8.9	9.1	4.9
LAKE POWELL	24322.0	15453.0	13249.0	---
QUAIL CREEK	40.0	29.7	28.6	29.7
UPPER ENTERPRISE	10.0	6.0	10.0	---
LOWER ENTERPRISE	2.6	0.8	2.5	90.0

E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Watershed Snowpack Analysis - March 1, 2012

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
VIRGIN RIVER	5	39	67
PAROWAN	2	38	63
ENTERPRISE TO NEW HARMONY	2	42	48
COAL CREEK	2	38	66
ESCALANTE RIVER	2	69	88
SOUTHWESTERN UTAH	9	45	68

* 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 1971-2000 base period.

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

David White
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

David Brown
State Conservationist
Natural Resources Conservation Service
Salt Lake City, Utah

Prepared by
Snow Survey Staff
Randall Julander, Supervisor
Troy Brosten, Assistant Supervisor
Beau Uriona, Hydrologist
Amy Burke, Hydrologist
Jordan Clayton, Hydrologist
Bob Nault, Electronics Technician

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Snow Survey, NRCS, USDA
245 North Jimmy Doolittle Road
Salt Lake City, UT 84116
(801) 524-5213

Utah Water Supply Outlook Report

Natural Resources Conservation Service
Salt Lake City, UT