United States Department of Agriculture

Natural Resources Conservation Service

Arizona
Basin Outlook Report
February 1, 2012

Issued by

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Basin Outlook Reports
And Federal – State – Private Cooperative Snow Surveys

How forecasts are made

Most of the annual streamflow in Arizona originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated Snow Telemetry (SNOTEL) sites, along with precipitation and streamflow values, are used in statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service (NRCS) the National Weather Service, and the Salt River Project.

Forecasts of any kind are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertainty 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 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 are concerned about having an adequate water supply, they may want to base their decisions on the 90% or 70% exceedance probability forecasts. On the other hand, if users anticipate receiving too much water, or are concerned about the threat of flooding, they may want to base their decisions on the 30% or 10% exceedance probability forecasts. Regardless of the forecast value users choose, they should be prepared to deal with either more or less water.

For more water supply and resource management information, contact:

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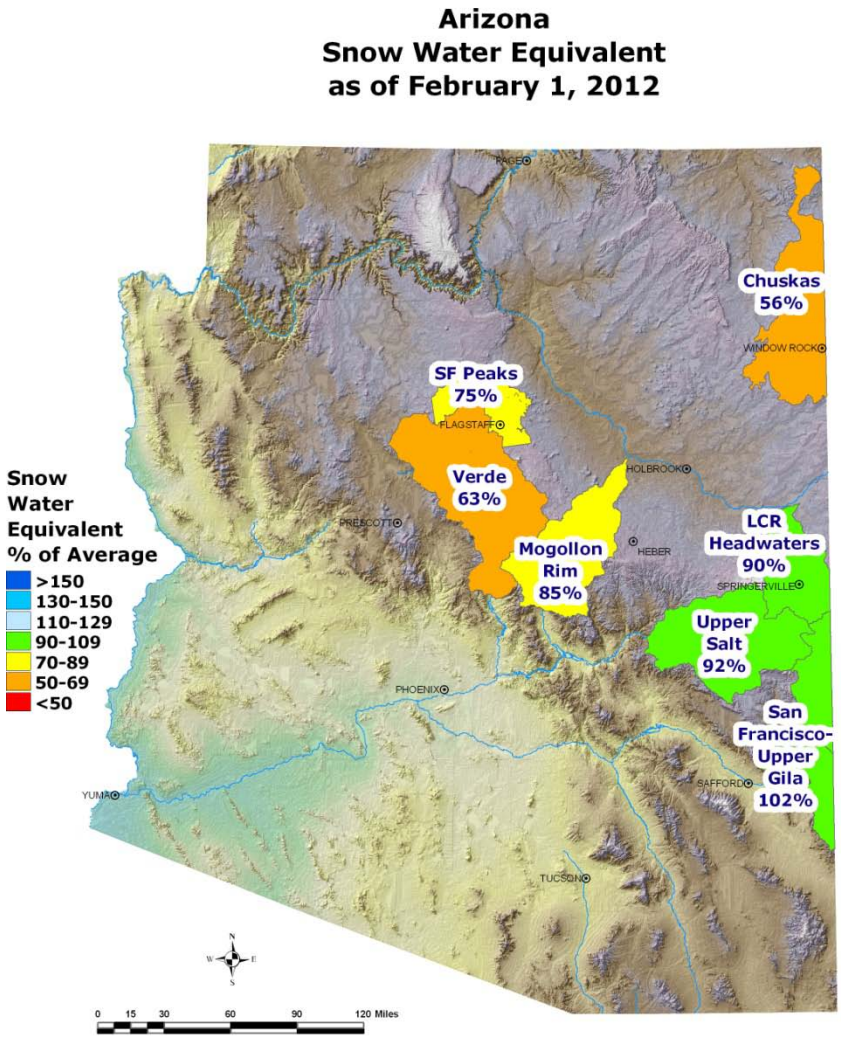
ARIZONA Basin Outlook Report
as of February 1, 2012

SUMMARY

As of February 1, snowpack levels are now well below normal in the Verde River Basin, and at or slightly below normal in the other major basins. Precipitation for the month of January was well below normal throughout the basins. The Salt and Verde River reservoir system now stands at 66 percent of capacity, while San Carlos Reservoir is at 27 percent of capacity. The forecast calls for well below normal runoff in all of the basins for the spring runoff period.

SNOWPACK

Snow water equivalent levels are now well below normal in the Verde River Basin at 63 percent of average. The Salt, Little Colorado River, and San Francisco-Upper Gila River Basins are close to normal levels, ranging from 90 to 102 percent of average. The statewide snowpack is below normal at 71 percent of average.

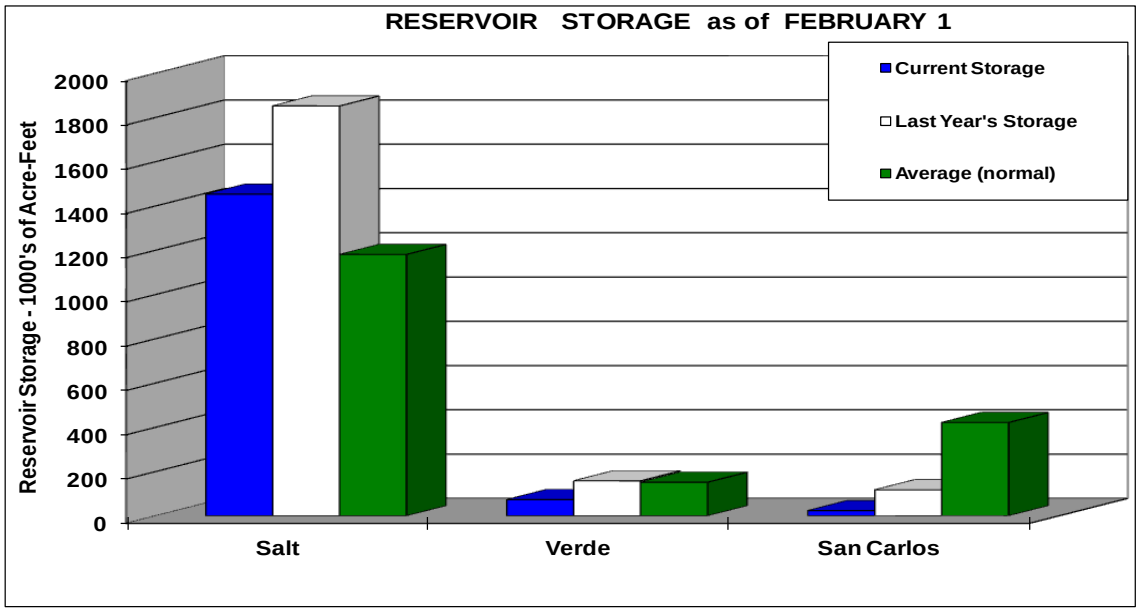


PRECIPITATION

Mountain data from NRCS SNOTEL sites and Cooperator precipitation gages show that January precipitation was well below normal in all of the basins, ranging from 19 percent of average in the Verde River Basin to 38 percent of average in the San Francisco-Upper Gila River Basin. Cumulative precipitation since October 1 is now below normal in the Verde River Basin, and about normal in the other major basins. Please refer to the precipitation bar graphs found in this report for more information on precipitation levels in the basins.

RESERVOIR STORAGE

As of February 1, the Salt and Verde River reservoir system stands at 66 percent of capacity. San Carlos Reservoir, however, is well below normal at only 27 percent of capacity.

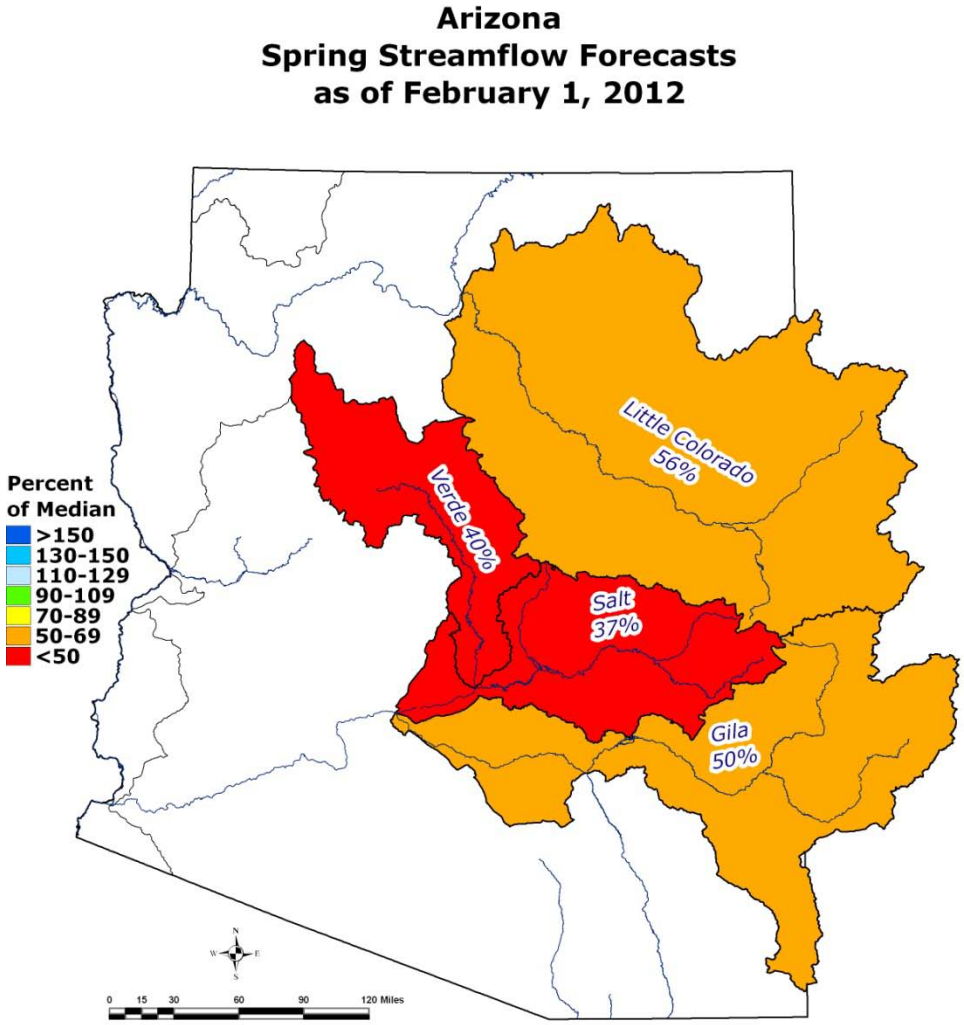


Key storage volumes displayed in thousands of acre-feet (x1000):

Reservoir	Current Storage	Last Year Storage	30-Year Average	Storage Capacity
Salt River System	1453.2	1851.9	1181.1	2025.8
Verde River System	73.4	158.1	151.3	287.4
San Carlos Reservoir	23.7	117.4	421.8	875.0
Lyman Lake	9.5	17.9	14.7	30.0
Lake Havasu	553.9	446.4	551.8	619.0
Lake Mohave	1627.7	1670.1	1672.3	1810.0
Lake Mead	15022.0	10765	21992.0	26159.0
Lake Powell	15648.0	13829	18463.0	24322.0

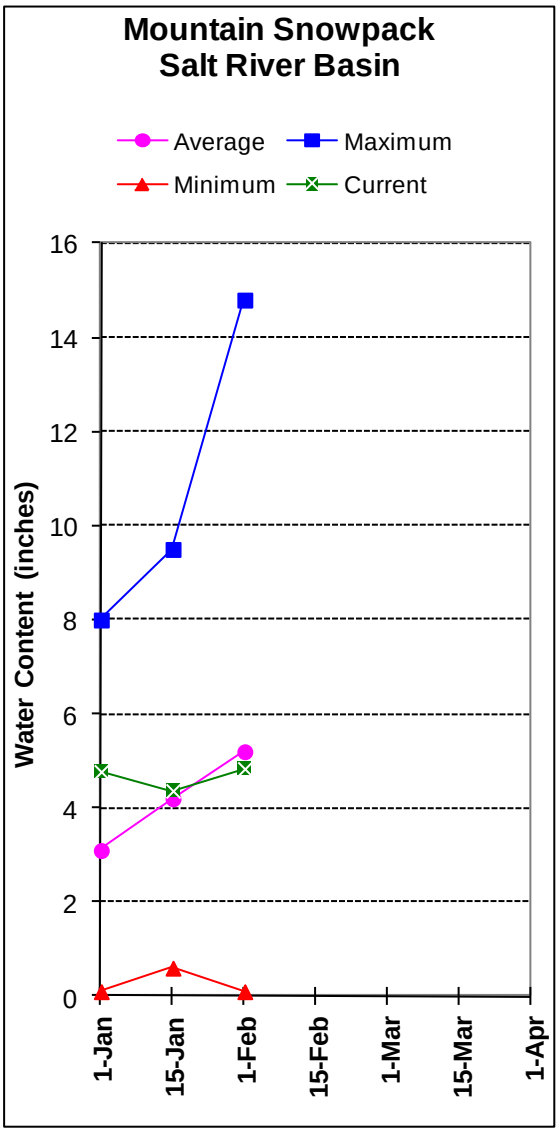
STREAMFLOW

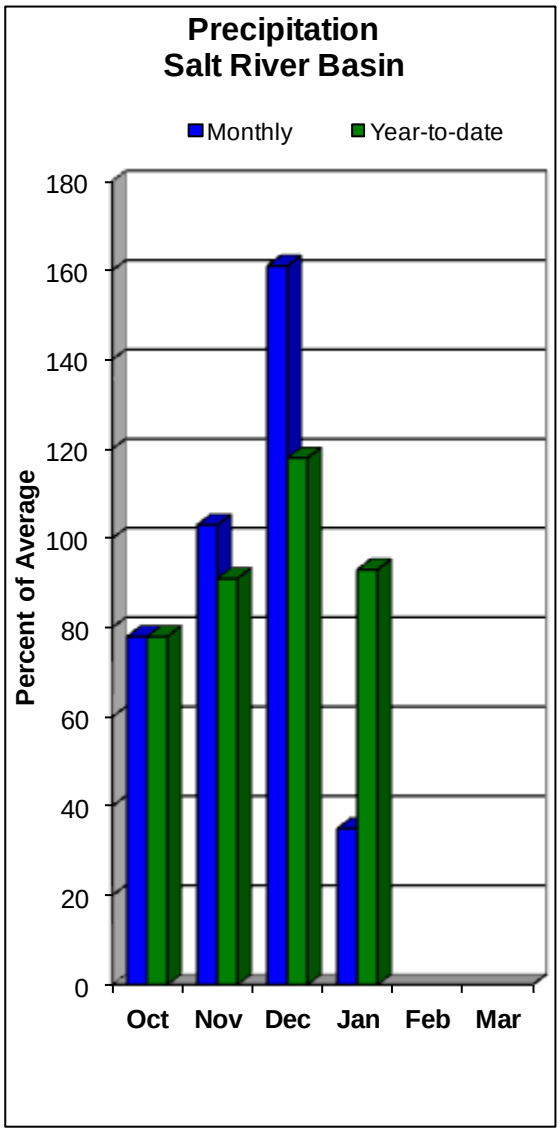
As of February 1, the forecast calls for well below normal streamflow in all of the basins for the spring runoff period, ranging from 37 percent of median in the Salt River near Roosevelt to 56 percent of median in the Little Colorado River above Lyman Lake. The updated streamflow forecasts are based on several factors, including an exceptionally dry January and an outlook for dry conditions to persist through the spring. Please refer to the basin forecast tables found in this report for more information regarding water supply forecasts.



SALT RIVER BASIN as of February 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Salt River, near Roosevelt, the forecast calls for 37% of median streamflow through May, while at Tonto Creek, the forecast calls for 40% of median streamflow through May. Snow survey measurements show the Salt snowpack to be at 92% of average.





SALT RIVER BASIN as of February 1, 2012

SALT RIVER BASIN
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * — 50% (1000AF)	50% (% MED.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Med (1000AF)
Salt R nr Roosevelt (3)							
FEB-MAY	50	91	130	37	178	270	355
FEBRUARY			22	48			46
Tonto Ck ab Gun Ck nr Roosevelt (3)							
FEB-MAY	3.2	10.8	20	40	33	62	50
FEBRUARY			3.0	24			12.6

* 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 and median are 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.

SALT RIVER BASIN
Reservoir Storage (1000AF) End of January

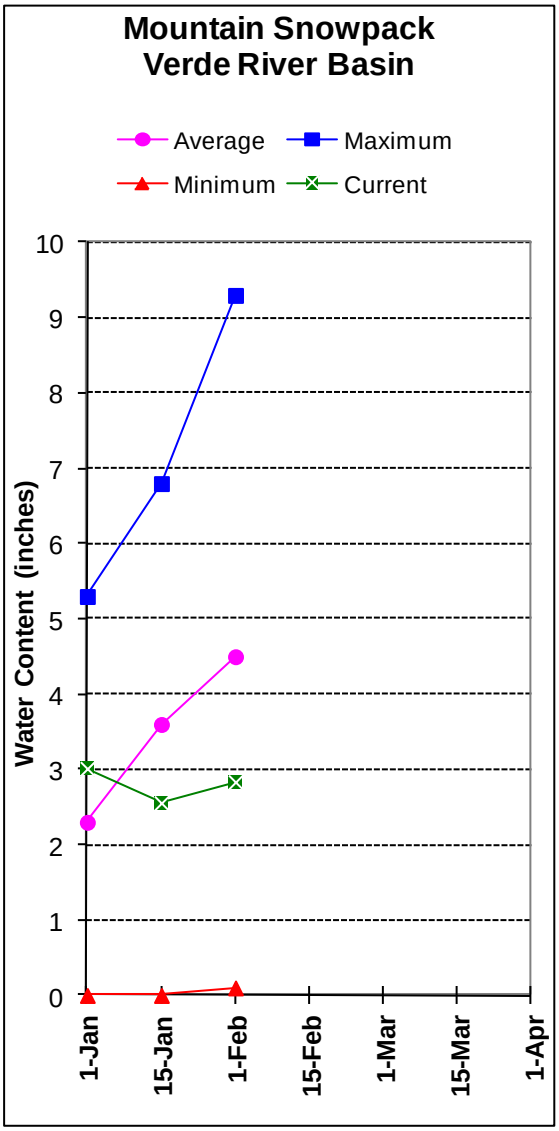
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
SALT RIVER RES SYSTEM	2025.8	1453.2	1851.9	1181.1

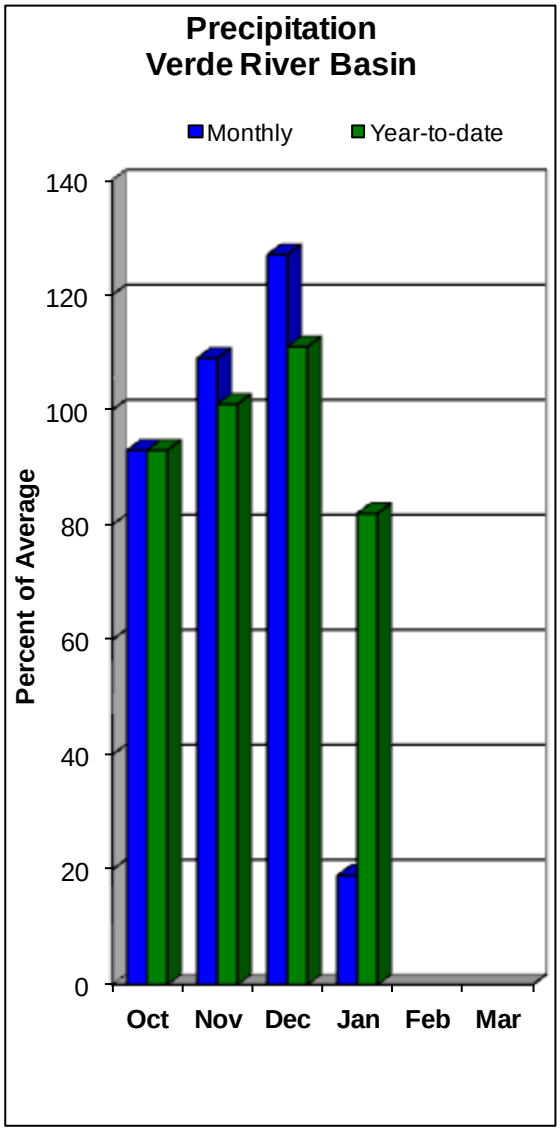
SALT RIVER BASIN
Watershed Snowpack Analysis - February 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SALT RIVER BASIN	10	153	92

VERDE RIVER BASIN as of February 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Verde River, at Horseshoe Dam, the forecast calls for 40% of median streamflow through May. Snow survey measurements show the Verde snowpack to be at 63% of average.





VERDE RIVER BASIN as of February 1, 2012

VERDE RIVER BASIN
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions 50% (1000AF)	50% (% MED.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Med (1000AF)
Verde R bl Tangle Ck ab Horseshoe Dam (3							
FEB-MAY	23	52	80	40	117	191	200
FEBRUARY			15.0	43			35

* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.
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(3) - Median value used in place of average.

VERDE RIVER BASIN
Reservoir Storage (1000AF) End of January

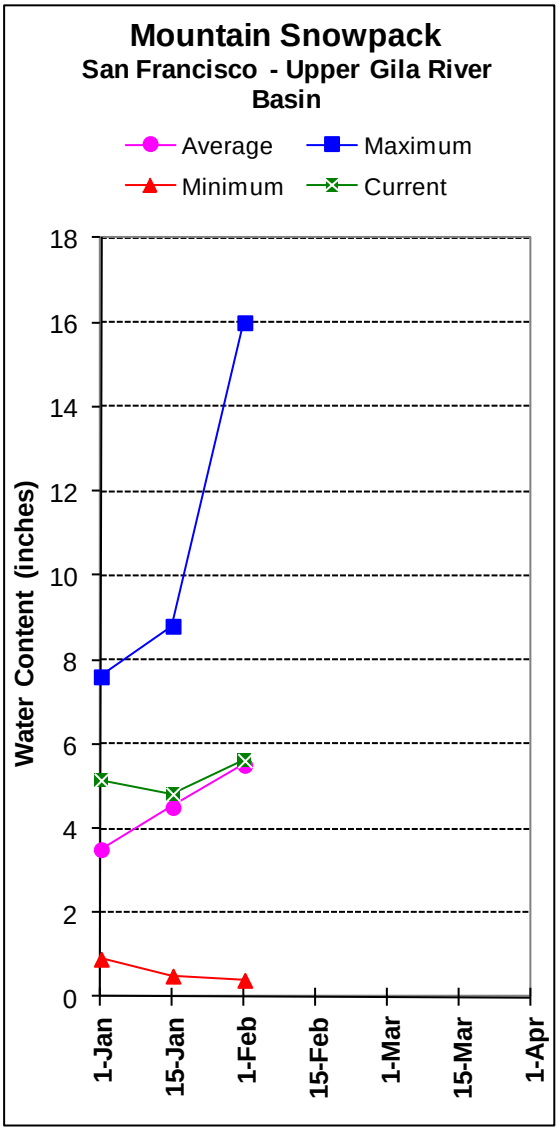
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
VERDE RIVER RES SYSTEM	287.4	73.4	158.1	151.3

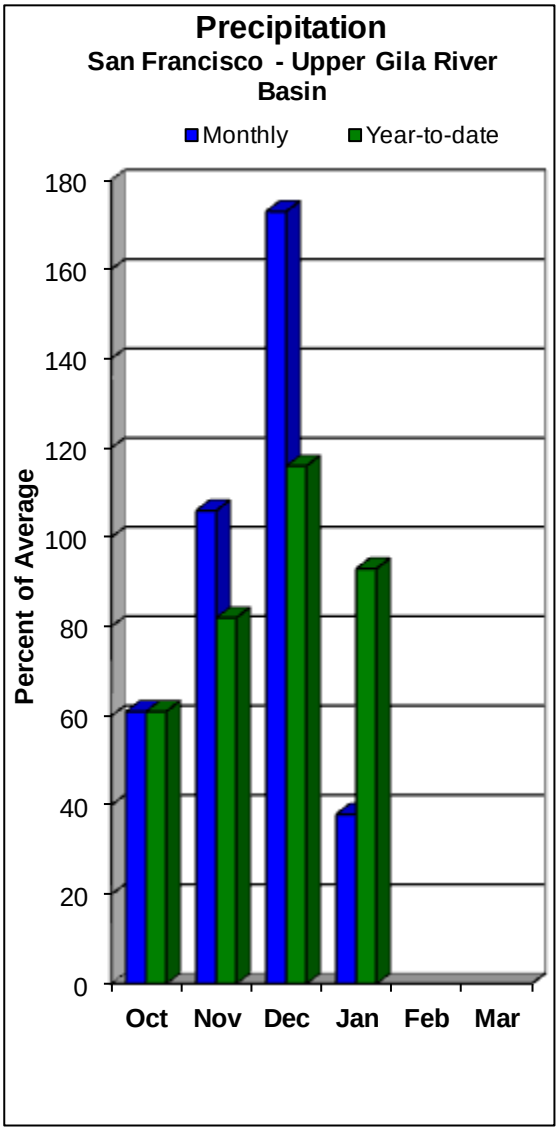
VERDE RIVER BASIN
Watershed Snowpack Analysis - February 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
VERDE RIVER BASIN	11	73	63
SAN FRANCISCO PEAKS	3	67	75

SAN FRANCISCO-UPPER GILA RIVER BASIN as of February 1, 2012

Well below normal streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 53% of median streamflow levels through May. In the Gila River, near Solomon, the forecast also calls for 49% of median streamflow levels through May. At San Carlos Reservoir, inflow to the lake is forecast at 50% of median through May. Snow survey measurements show the snowpack for this basin to be at 102% of average.





SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === Future Conditions === Wetter ===> Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% MED.)	30% (1000AF)	10% (1000AF)	30 Yr Med (1000AF)
Gila R at Gila (3)							
FEB-MAY	17.6	27	36	68	46	64	53
Gila R bl Blue Ck nr Virden (3)							
FEB-MAY	19.0	24	39	52	57	91	75
San Francisco R at Glenwood (3)							
FEB-MAY	4.1	8.1	12.0	50	16.9	40	24
San Francisco R at Clifton (3)							
FEB-MAY	12.0	15.0	31	53	54	87	59
Gila R nr Solomon (3)							
FEB-MAY	28	40	71	49	127	210	144
FEBRUARY			15.0	63			24
San Carlos Reservoir Inflow (2,3)							
FEB-MAY	17.0	25	42	50	84	145	84

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

SAN FRANCISCO - UPPER GILA RIVER BASIN
Reservoir Storage (1000AF) End of January

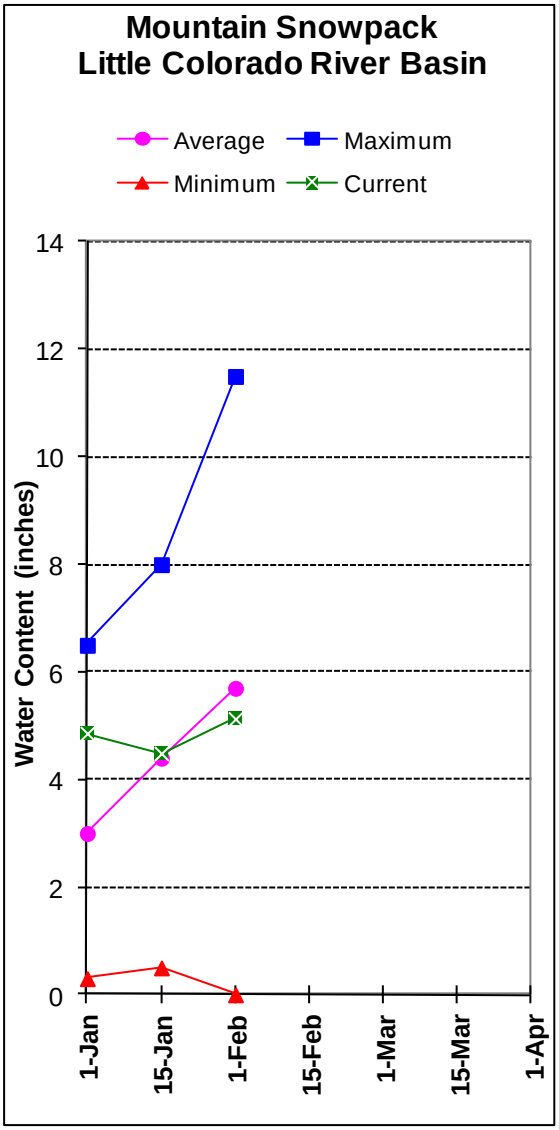
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
SAN CARLOS	875.0	23.7	117.4	421.8

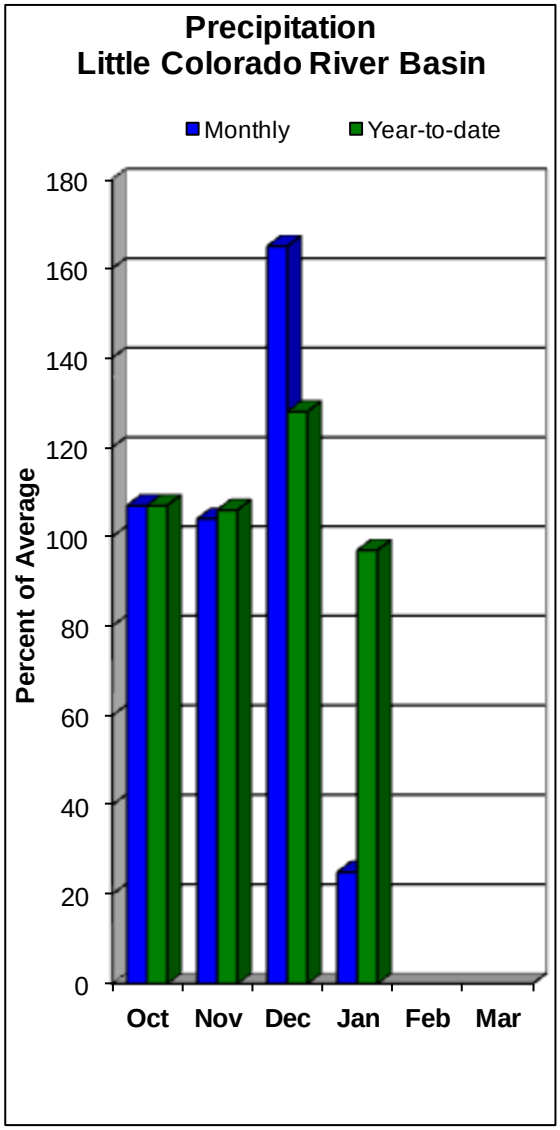
SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - February 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SAN FRANCISCO - UPPER GILA R	11	201	102

LITTLE COLORADO RIVER BASIN as of February 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 56% of median streamflow through June. At Blue Ridge (C.C. Cragin) Reservoir, inflow to the lake is forecast at 49% of median through May. Snowpacks along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 90% and 85% of average, respectively.





LITTLE COLORADO RIVER BASIN as of February 1, 2012

LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions 50% (1000AF)	50% (% MED.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Med (1000AF)
Little Colorado R ab Lyman Lake (3)							
FEB-JUN	1.17	2.60	4.00	56	5.90	9.51	7.10
Rio Nutria nr Ramah (3)							
FEB-MAY	0.10	0.26	0.90	30	2.20	5.50	3.00
Ramah Reservoir Inflow (3)							
FEB-MAY	0.20	0.30	0.50	30	2.10	4.70	1.66
Zuni River ab Black Rock Reservoir (3)							
FEB-MAY	0.07	0.18	0.30	38	0.47	0.82	0.80
Blue Ridge Reservoir Inflow (3)							
FEB-MAY	2.3	5.1	7.9	49	11.6	18.8	16.3
Lake Mary Reservoir Inflow (3)							
FEB-MAY	0.99	1.87	2.70	56	3.70	5.70	4.80

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

LITTLE COLORADO RIVER BASIN
Reservoir Storage (1000AF) End of January

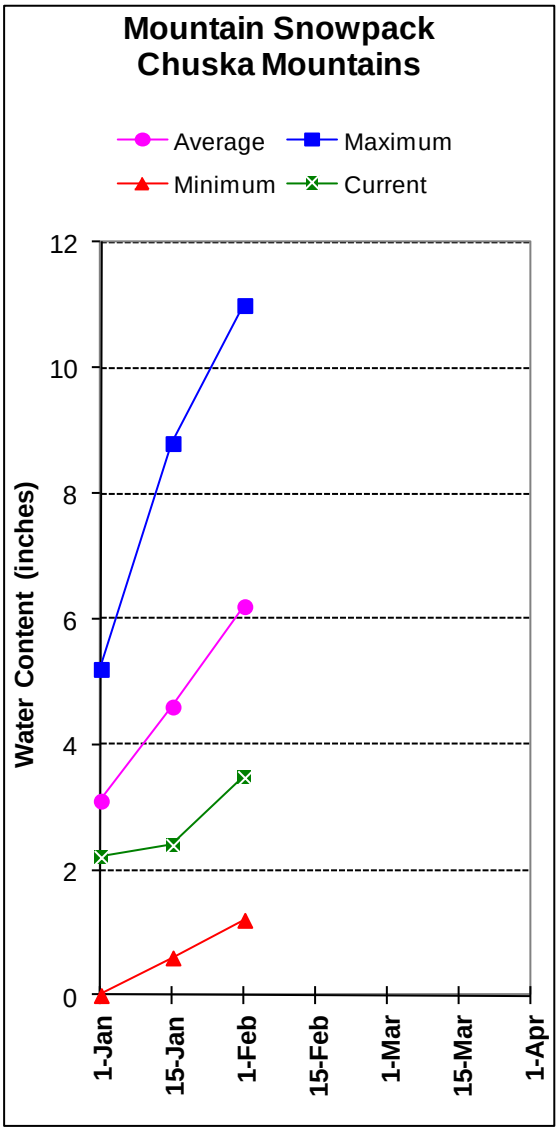
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
LYMAN RESERVOIR	30.0	9.5	17.9	14.7

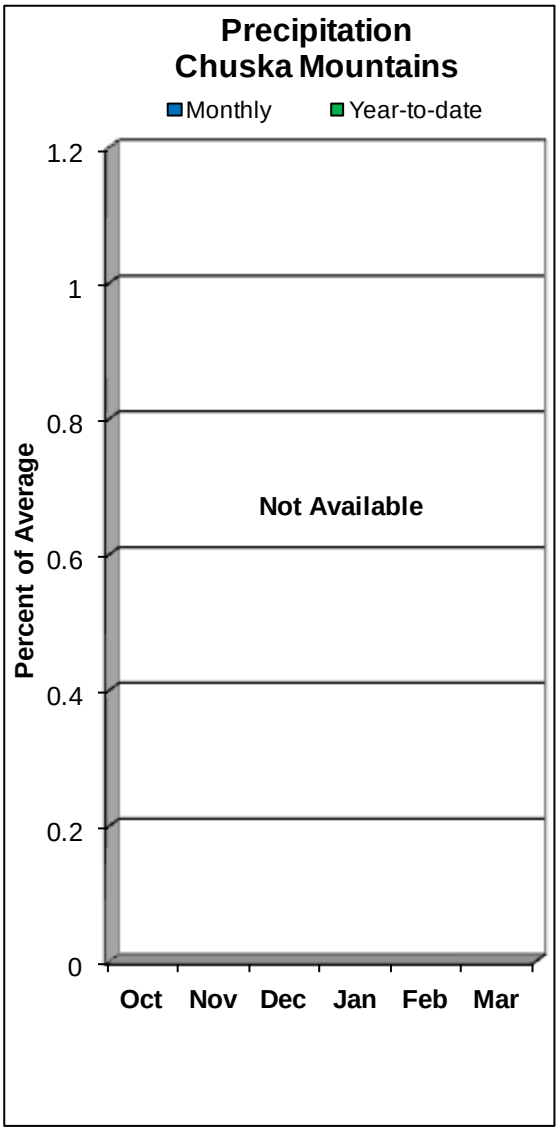
LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - February 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
LITTLE COLORADO - SOUTHERN H	10	139	90
CENTRAL MOGOLLON RIM	4	120	85

CHUSKA MOUNTAINS as of February 1, 2012

Snow survey measurements conducted by staff of the Navajo Water Management Branch show the Chuska snowpack to be at 56% of average. Well below normal runoff is forecast for Captain Tom Wash, Wheatfields Creek, Bowl Canyon Creek, and Kinlichee Creek.





CHUSKA MOUNTAINS as of February 1, 2012

CHUSKA MOUNTAINS
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * — 50% (1000AF) (% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Captain Tom Wash nr Two Gray Hills						
MAR-MAY	0.05	0.58	1.50 (53)	3.10	7.00	2.83
Wheatfields Ck nr Wheatfields						
MAR-MAY	0.55	1.04	1.50 (52)	2.10	3.20	2.90
Bowl Canyon Ck ab Asaayi Lake						
MAR-MAY	0.09	0.28	0.50 (50)	0.81	1.48	1.00
Kinlichee Ck						
MAR-MAY	0.08	0.37	0.75 (44)	1.33	2.60	1.70

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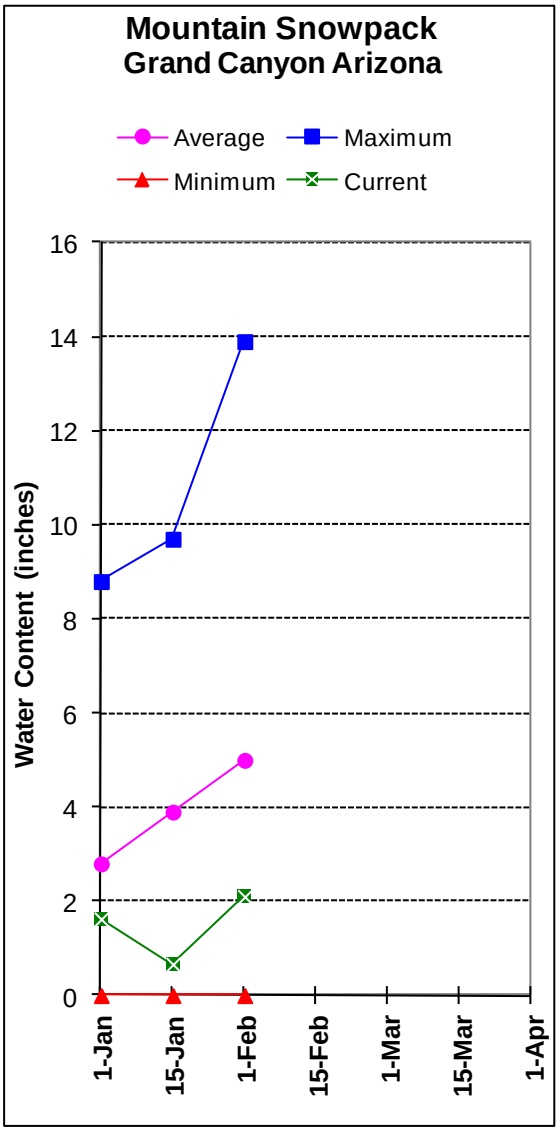
(3) - Median value used in place of average.

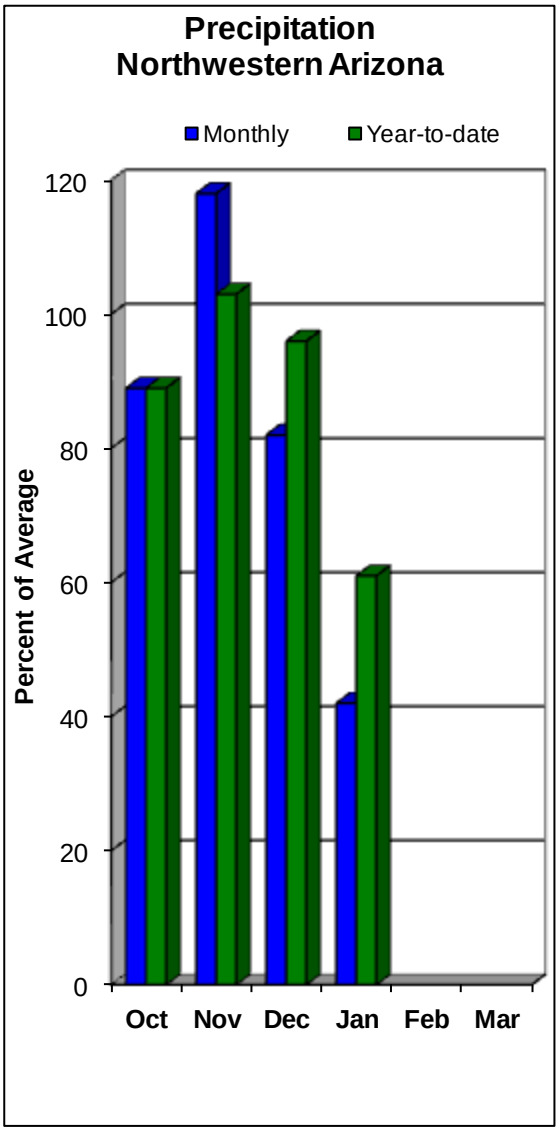
CHUSKA MOUNTAINS
Watershed Snowpack Analysis - February 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CHUSKA MOUNTAINS	7	66	56
DEFIANCE PLATEAU	2	83	35

NORTHWESTERN ARIZONA as of February 1, 2012

On the Colorado River, well below normal inflow to Lake Powell is forecast at 64% of the 30-year average for the forecast period April-July. At the Grand Canyon, measurements conducted by park rangers show the snowpack to be at 42% of average.





NORTHWESTERN ARIZONA as of February 1, 2012

NORTHWESTERN ARIZONA
Streamflow Forecasts - February 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	Future Conditions — Chance of Exceeding * — 50% (1000AF)	50% (% AVG.)	=== Wetter ===> 30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Virgin R at Littlefield							
APR-JUL	17.0	19.0	27	37	38	57	74
Lake Powell Inflow (2)							
APR-JUL	2800	3880	5050	64	6370	8600	7930

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(2) - The value is natural volume - actual volume may be affected by upstream water management.
(3) - Median value used in place of average.

NORTHWESTERN ARIZONA
Reservoir Storage (1000AF) End of January

Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
LAKE HAVASU	619.0	553.9	446.4	551.8
LAKE MOHAVE	1810.0	1627.7	1670.1	1672.3
LAKE MEAD	26159.0	15022.0	10765.0	21992.0
LAKE POWELL	24322.0	15648.0	13829.0	18463.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - February 1, 2012

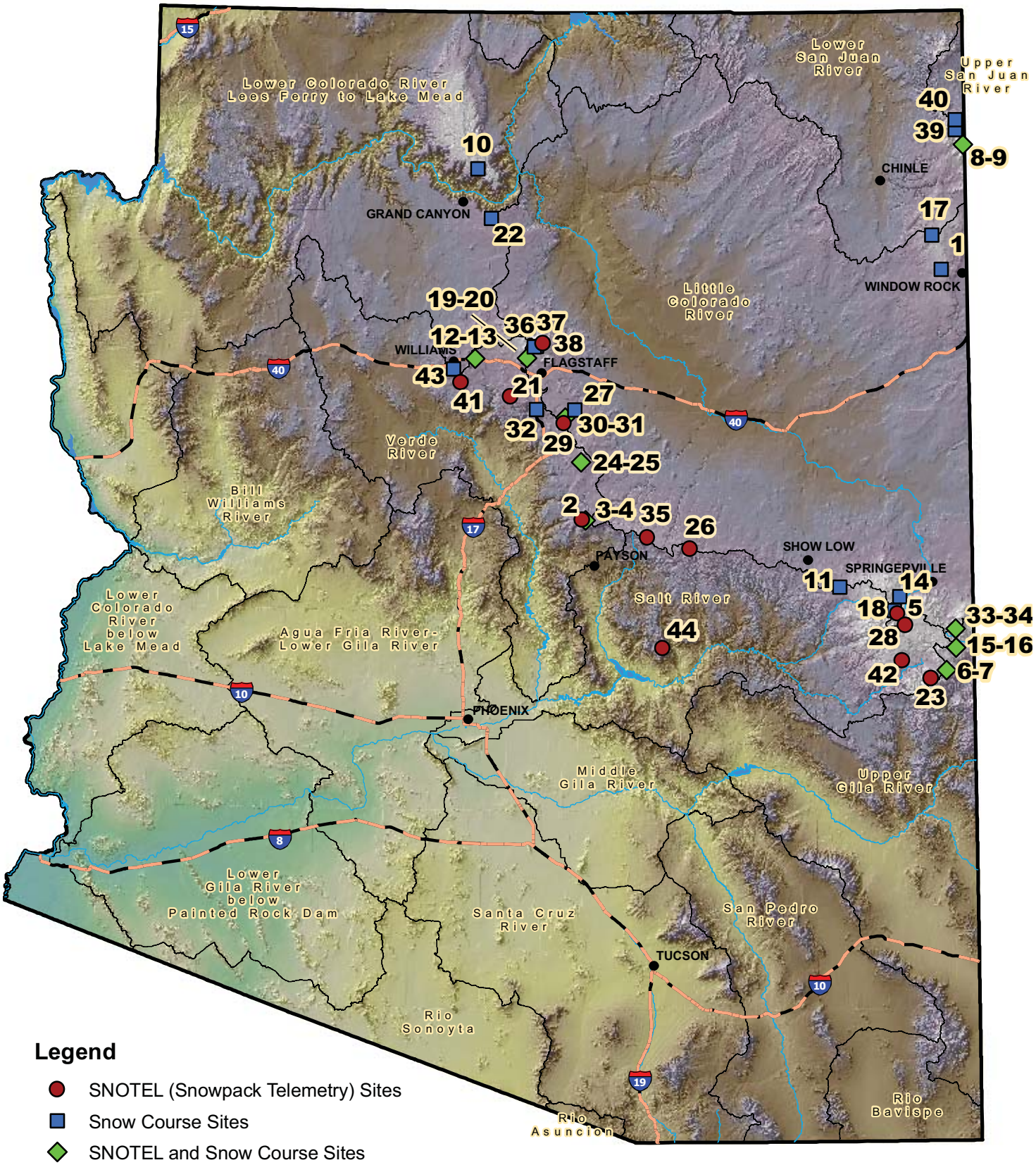
Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
GRAND CANYON	2	57	42

S N O W S U R V E Y D A T A

FEBRUARY 1, 2012

MAP NUM.	SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
1.	ARBABS FOREST (AK)	7680	1/25	5	1.0	1.2	2.6
2.	BAKER BUTTE SNOTEL	7330	2/01	11	3.3	2.1	4.6
3.	BAKER BUTTE #2	7700	1/30	23	7.9	6.6	8.2
4.	BAKER BUTTE SMT SNTL	7700	2/01	27	8.5	7.4	-
5.	BALDY SNOTEL	9220	2/01	20	6.2	3.5	5.7
6.	BEAVER HEAD	8000	2/01	6	1.9	.5	2.8
7.	BEAVER HEAD SNOTEL	7990	2/01	8	3.8	1.5	3.1
8.	BEAVER SPRING	9220	1/26	19	4.3	-	7.5
9.	BEAVER SPRING SNOTEL	9200	2/01	11	5.2	5.5	-
10.	BRIGHT ANGEL	8400	1/31	11	3.2	7.4	7.5
11.	BUCK SPRING	7400	1/31	6	2.6	1.3	4.8
12.	CHALENDER	7100	1/30	0	.0	1.9	2.5
13.	CHALENDER SNOTEL	7100	2/01	4	1.3	2.9	-
14.	CHEESE SPRINGS	8600	1/27	20	4.3	2.0	4.3
15.	CORONADO TRL SNOTEL	8400	2/01	1	.6	2.2	3.2
16.	CORONADO TRAIL	8350	2/01	0	.0	.0	2.6
17.	FLUTED ROCK	7800	1/25	5	1.0	1.2	3.1
18.	FORT APACHE	9160	1/27	28	6.7	2.8	6.1
19.	FORT VALLEY	7350	1/31	0	.0	1.2	2.4
20.	FORT VALLEY SNOTEL	7350	2/01	0	.0	.3	-
21.	FRY SNOTEL	7220	2/01	18	4.2	5.7	4.9
22.	GRAND CANYON	7500	1/25	4	1.0	.0	2.6
23.	HANNAGAN MDWS SNOTEL	9020	2/01	33	8.6	5.8	8.6
24.	HAPPY JACK	7630	1/30	5	1.7	3.6	3.8
25.	HAPPY JACK SNOTEL	7630	2/01	14	3.9	6.9	3.7
26.	HEBER SNOTEL	7640	2/01	11	4.2	3.3	4.8
27.	LAKE MARY	6930	1/30	9	2.7	1.9	2.7
28.	MAVERICK FORK SNOTEL	9200	2/01	24	6.6	5.8	7.3
29.	MORMON MTN SNOTEL	7500	2/01	7	3.1	3.5	4.9
30.	MORMON MT. SUMMIT #2	8470	1/30	19	5.4	9.4	9.1
31.	MORMON MTN SUMMIT SN	8500	2/01	18	4.3	5.8	-
32.	NEWMAN PARK	6750	1/31	5	1.6	1.6	2.5
33.	NUTRIOSO	8500	2/01	0	.0	.0	1.7
34.	NUTRIOSO SNOTEL	8500	2/01	0	.2	.0	-
35.	PROMONTORY SNOTEL	7900	2/01	24	8.0	7.1	9.7
36.	SNOW BOWL #1 ALT.	10260	1/31	20	6.2	10.4	8.7
37.	SNOW BOWL #2	11000	1/31	24	7.2	10.2	11.8
38.	SNOWSLIDE CYN SNOTEL	9750	2/01	34	8.2	12.3	9.1
39.	TSAILE CANYON #1	8160	1/26	11	2.2	5.5	5.3
40.	TSAILE CANYON #3	8920	1/26	18	4.0	7.3	7.2
41.	WHITE HORSE SNOTEL	7180	2/01	1	.5	3.1	3.8
42.	WILDCAT SNOTEL	7850	2/01	10	4.6	1.8	3.4
43.	WILLIAMS SKI RUN	7720	1/30	15	3.5	6.8	6.1
44.	WORKMAN CREEK SNOTEL	6900	2/01	14	5.6	4.8	4.8

Arizona Snow Survey Data Sites



Legend

- SNOTEL (Snowpack Telemetry) Sites
- Snow Course Sites
- SNOTEL and Snow Course Sites
- Basin Boundaries

0 12.5 25 50 75 100 Miles

N

February 2010
Data Sources: NRCS / ALRIS
Projection: UTM Zone 12 Datum: NAD83
For Further Information Contact:
Arizona NRCS State Headquarters - (602) 280-8831
230 N. 1st Ave., Suite 509, Phoenix, AZ 85003

NRCS Natural Resources Conservation Service

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