United States Department of Agriculture

Natural Resources Conservation Service

Arizona
Basin Outlook Report
January 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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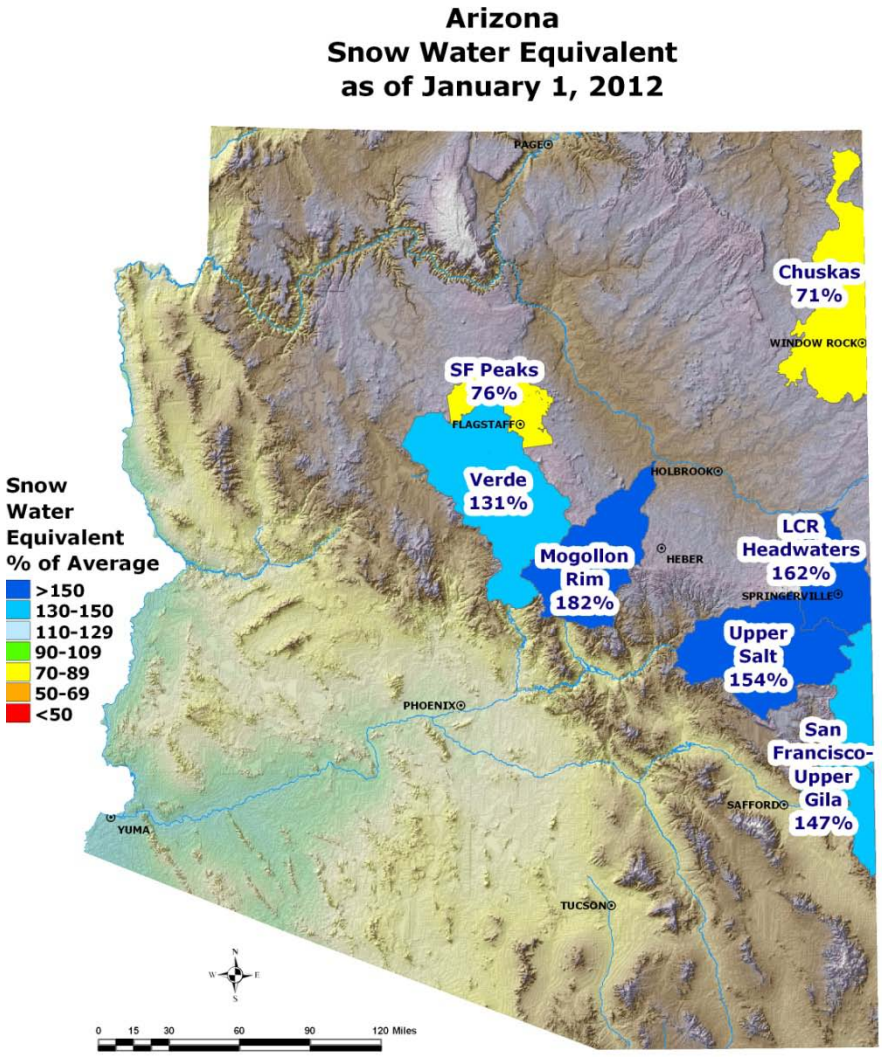
ARIZONA Basin Outlook Report
as of January 1, 2012

SUMMARY

As of January 1, snowpack levels are generally well above normal throughout the state, with the exception of the Chuska Mountains. Precipitation for the month of December was also well above normal in all major river basins. The Salt and Verde River reservoir system stands at 71 percent of capacity, while San Carlos Reservoir is at only 2 percent of capacity. The first forecast of the season calls for well below normal runoff in the Salt, Verde and Little Colorado River Basins, and below normal runoff in the San Francisco-Upper Gila River Basin for the spring runoff period.

SNOWPACK

Snow water equivalent levels are generally well above normal, ranging from 131 percent of average in the Verde River Basin to 162 percent of average in the Little Colorado River Basin. The exceptions are the Chuska Mountains and San Francisco Peaks, which are at 71 and 76 percent of average, respectively. The statewide snowpack is above normal at 119 percent of average.

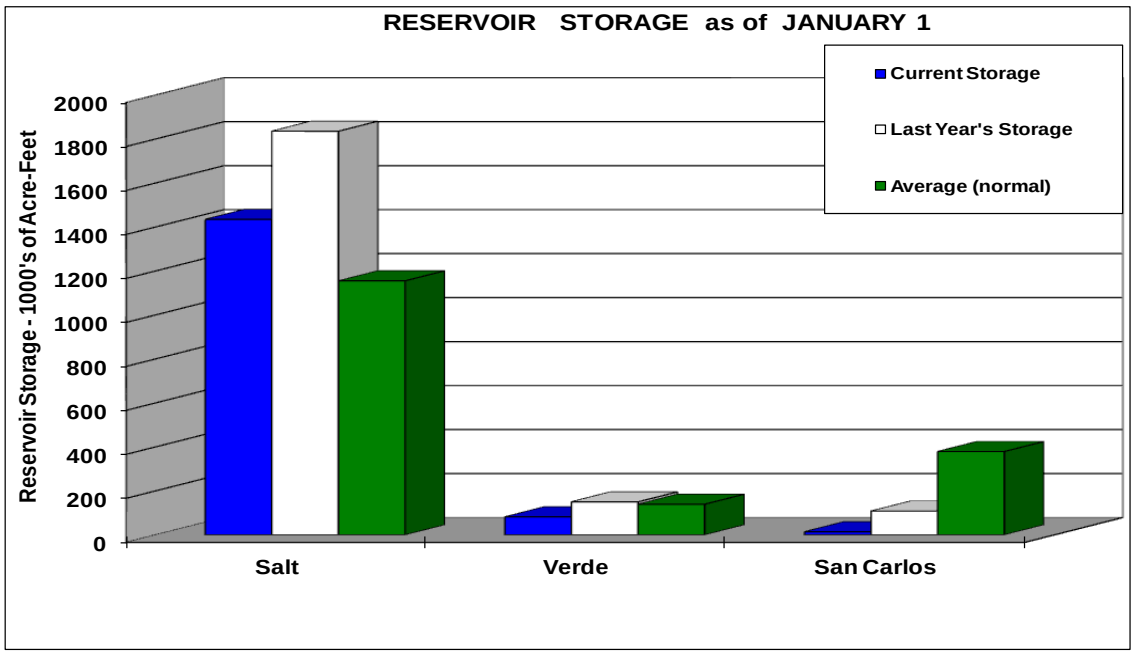


PRECIPITATION

Mountain data from NRCS SNOTEL sites and Cooperator precipitation gages show that December precipitation was well above normal in the basins, ranging from 127 percent of average in the Verde River Basin to 173 percent of average in the San Francisco-Upper Gila River Basin. During December, a series of strong winter storms moved across the mountains of Arizona and New Mexico, bringing above normal amounts of precipitation. Cumulative precipitation since October 1 is also above normal in all 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 January 1, the Salt and Verde River reservoir system stands at 71 percent of capacity. San Carlos Reservoir, however, is currently well below normal at only 2 percent of capacity.

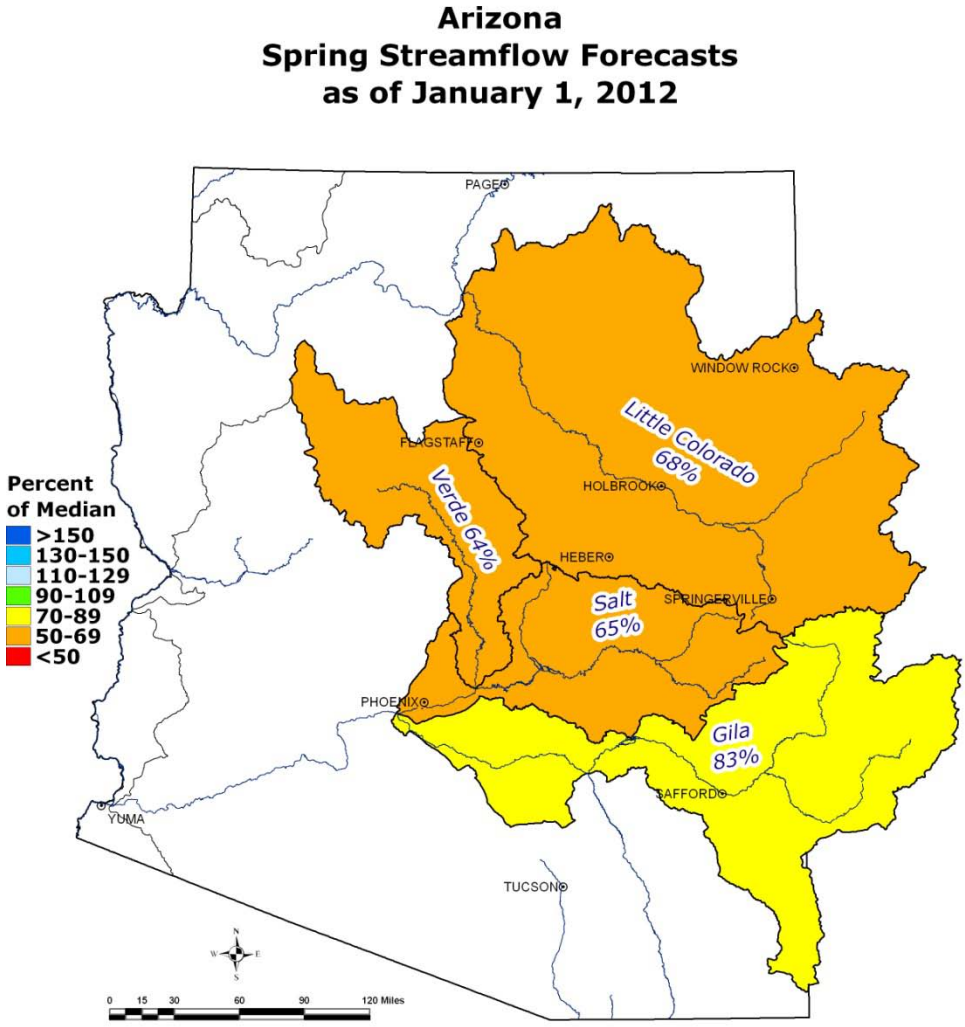


Key storage volumes displayed in thousands of acre-feet (x1000):

Reservoir	Current Storage	Last Year Storage	30-Year Average	Storage Capacity
Salt River System	1434.9	1835.7	1155.4	2025.8
Verde River System	82.1	150.4	139.5	287.4
San Carlos Reservoir	14.2	108.1	379.1	875.0
Lyman Lake	9.4	17.9	14.1	30.0
Lake Havasu	537.3	578.3	556.4	619.0
Lake Mohave	1591.1	1665.5	1596.6	1810.0
Lake Mead	14897.0	10302.0	21775.0	26159.0
Lake Powell	15959.0	14457.0	18933.0	24322.0

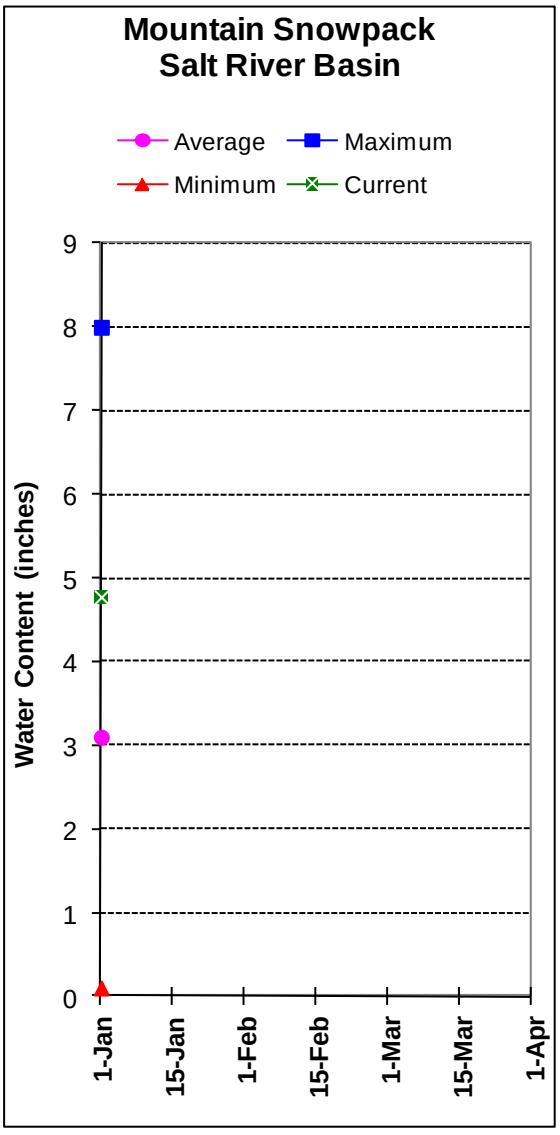
STREAMFLOW

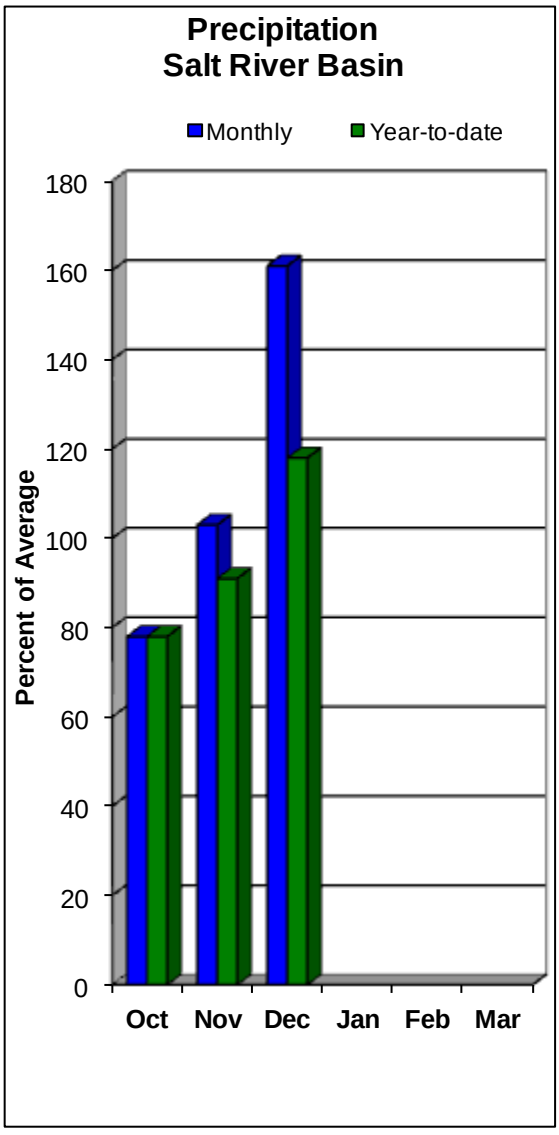
As of January 1, the forecast calls for well below normal to below normal streamflow for the spring runoff period, ranging from 64 percent of median in the Verde River above Horseshoe Dam to 83 percent of median at San Carlos Reservoir Inflow. The initial streamflow forecasts for the season are partially based on a moderate La Niña event, which typically exhibits drier conditions into the spring. In spite of the current above normal snowpacks across much of Arizona and western New Mexico, the dry outlook for January (and beyond) results in below median to well below median forecasts. Please refer to the basin forecast tables found in this report for more information regarding water supply forecasts.



SALT RIVER BASIN as of January 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Salt River, near Roosevelt, the forecast calls for 65% of median streamflow through May, while at Tonto Creek, the forecast calls for 63% of median streamflow through May. Snow survey measurements show the Salt snowpack to be at 155% of average.





SALT RIVER BASIN as of January 1, 2012

SALT RIVER BASIN
Streamflow Forecasts - January 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)							
JAN-MAY	94	175	250	65	345	525	385
JANUARY			19.1	78			25
Tonto Ck ab Gun Ck nr Roosevelt (3)							
JAN-MAY	4.3	17.7	35	63	61	119	56
JANUARY			4.50	76			5.90

* 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 December

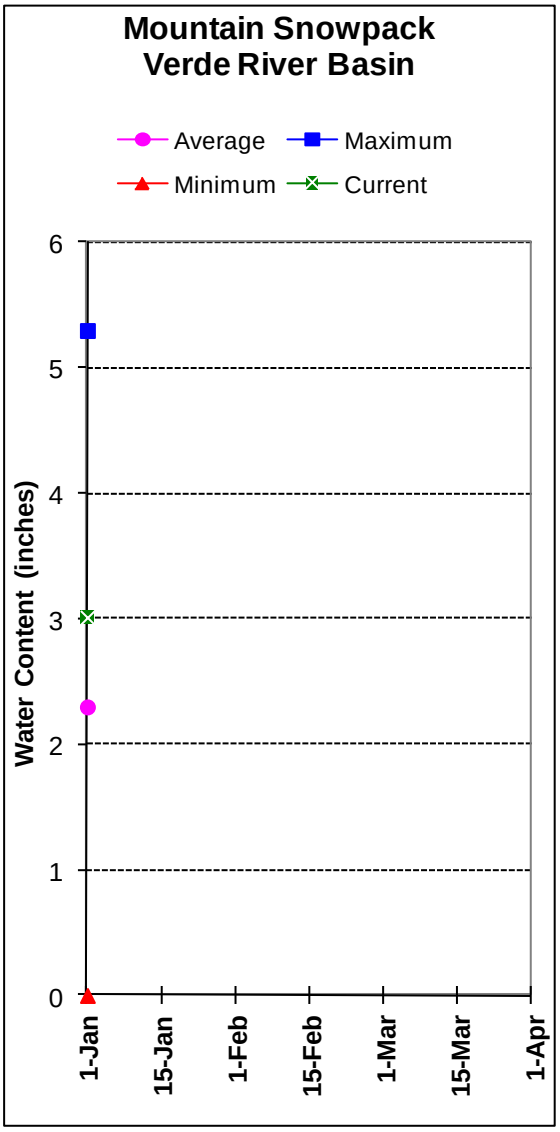
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
SALT RIVER RES SYSTEM	2025.8	1434.9	1835.7	1155.4

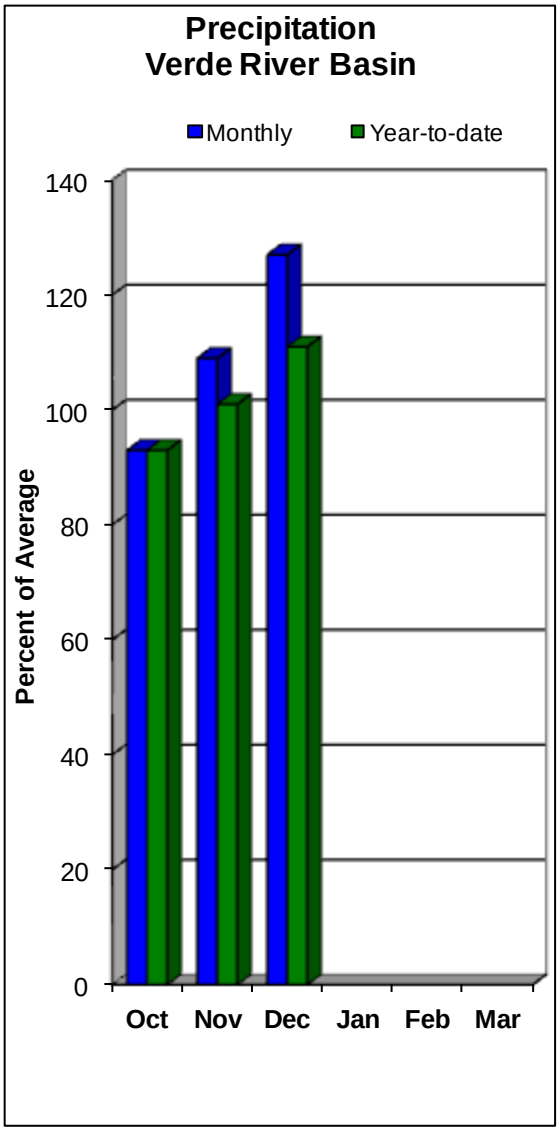
SALT RIVER BASIN
Watershed Snowpack Analysis - January 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SALT RIVER BASIN	10	150	155

VERDE RIVER BASIN as of January 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Verde River, at Horseshoe Dam, the forecast calls for 64% of median streamflow through May. Snow survey measurements show the Verde snowpack to be at 131% of average.





VERDE RIVER BASIN as of January 1, 2012

VERDE RIVER BASIN
Streamflow Forecasts - January 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							
JAN-MAY	42	91	140	64	205	330	220
JANUARY			17.0	71			24

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

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

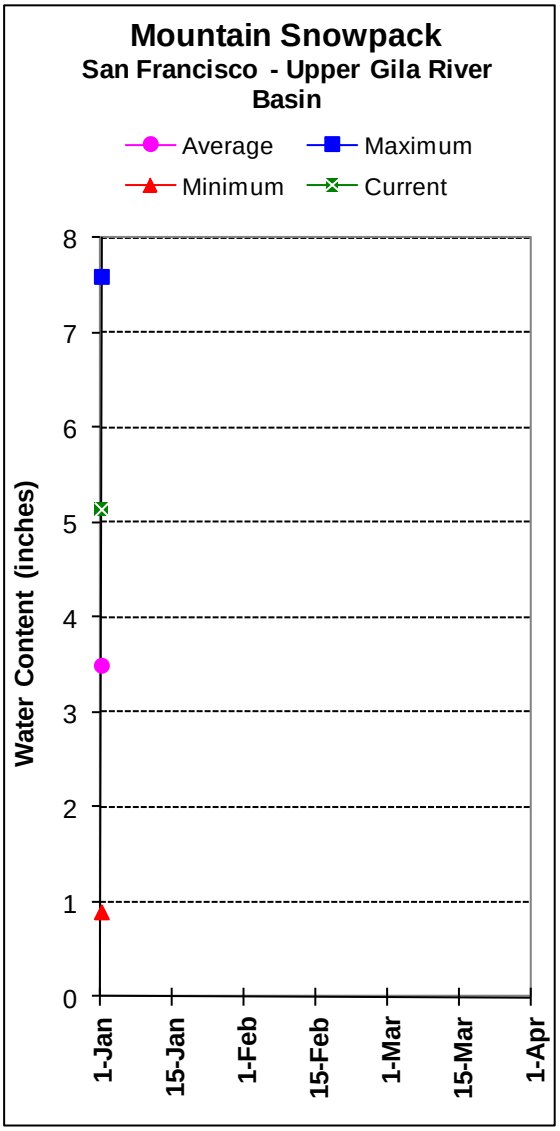
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
VERDE RIVER RES SYSTEM	287.4	82.1	150.4	139.5

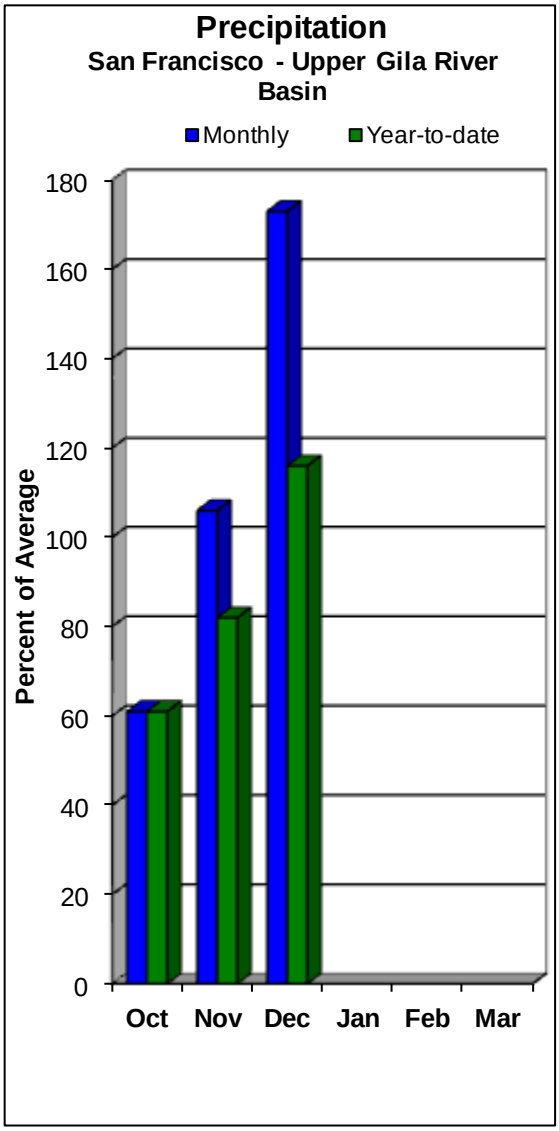
VERDE RIVER BASIN
Watershed Snowpack Analysis - January 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
VERDE RIVER BASIN	11	85	131
SAN FRANCISCO PEAKS	3	61	76

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

Well below normal to below normal streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 74% of median streamflow levels through May. In the Gila River, near Solomon, the forecast calls for 73% of median streamflow levels through May. At San Carlos Reservoir, inflow to the lake is forecast at 83% of median through May. Snow survey measurements show the snowpack for this basin to be at 149% of average.





SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - January 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)							
JAN-MAY	16.2	33	50	83	72	113	60
Gila R bl Blue Ck nr Virden (3)							
JAN-MAY	8.9	36	65	78	102	173	83
San Francisco R at Glenwood (3)							
JAN-MAY	3.8	10.5	18.0	67	28	50	27
San Francisco R at Clifton (3)							
JAN-MAY	21	27	52	74	77	113	70
Gila R nr Solomon (3)							
JAN-MAY	27	75	120	73	176	280	165
JANUARY			17.7	90			19.7
San Carlos Reservoir Inflow (2,3)							
JAN-MAY	10.0	23	80	83	172	370	96

* 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.

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

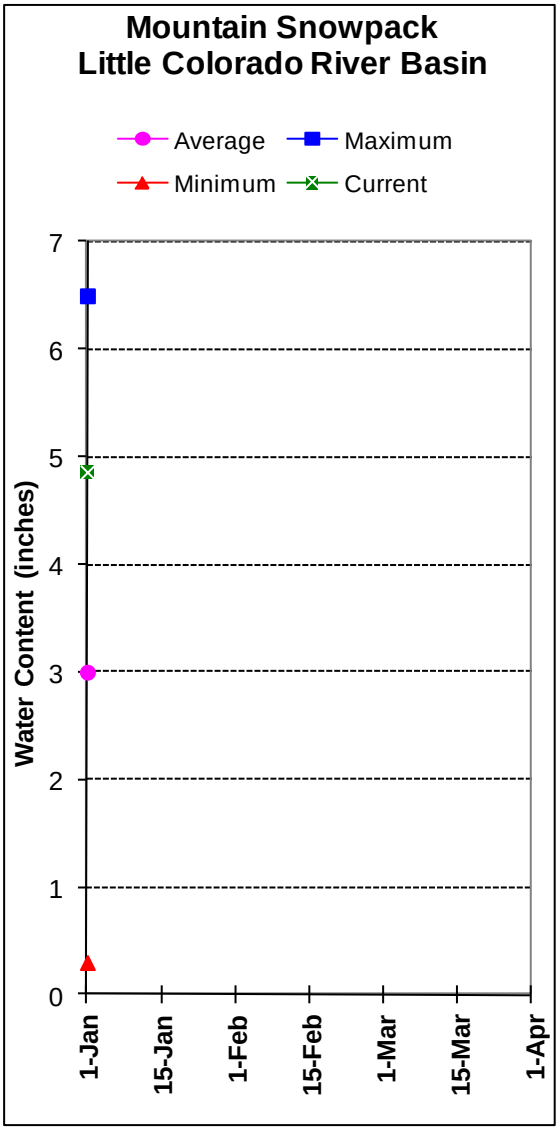
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
SAN CARLOS	875.0	14.2	108.1	379.1
PAINTED ROCK DAM		NO REPORT		

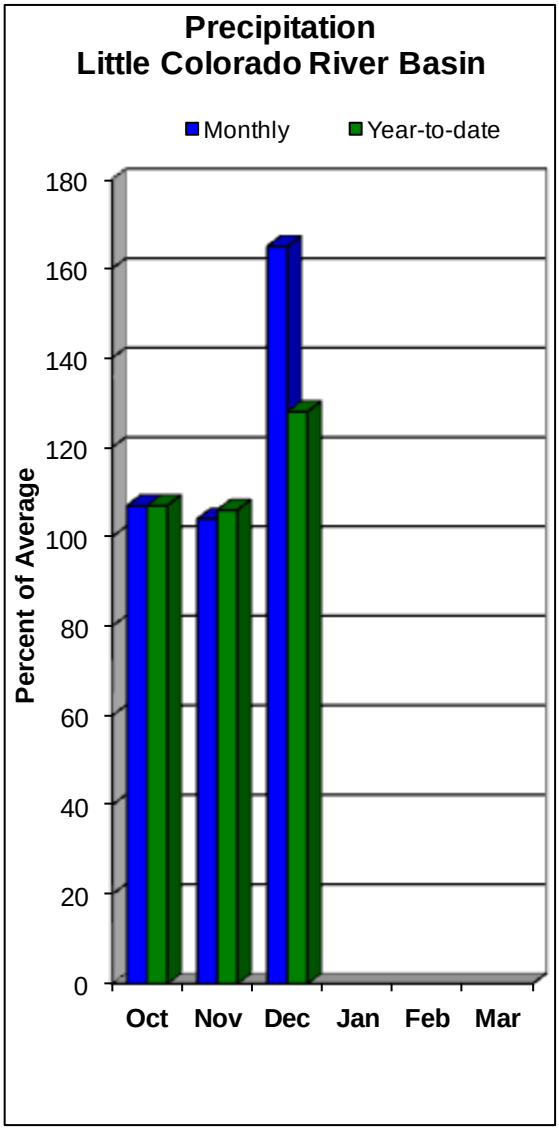
SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - January 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SAN FRANCISCO - UPPER GILA R	11	209	149

LITTLE COLORADO RIVER BASIN as of January 1, 2012

Well below normal streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 68% of median streamflow through June. At Blue Ridge (C.C. Cragin) Reservoir, inflow to the lake is forecast at 76% of median through May. Snowpacks along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 162% and 182% of average, respectively.





LITTLE COLORADO RIVER BASIN as of January 1, 2012

LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - January 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)
Little Colorado R ab Lyman Lake (3)							
JAN-JUN	1.28	3.10	5.00	68	7.60	12.70	7.40
Rio Nutria nr Ramah (3)							
JAN-MAY	0.03	0.37	1.00	32	2.10	4.80	3.10
Ramah Reservoir Inflow (3)							
JAN-MAY	0.00	0.17	0.55	32	1.16	2.40	1.71
Zuni River ab Black Rock Reservoir (3)							
JAN-MAY	0.00	0.04	0.35	39	1.20	4.00	0.90
Blue Ridge Reservoir Inflow (3)							
JAN-MAY	3.5	8.2	13.0	76	19.5	32	17.1
Lake Mary Reservoir Inflow (3)							
JAN-MAY	1.50	2.40	3.80	76	5.60	9.20	5.00

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

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

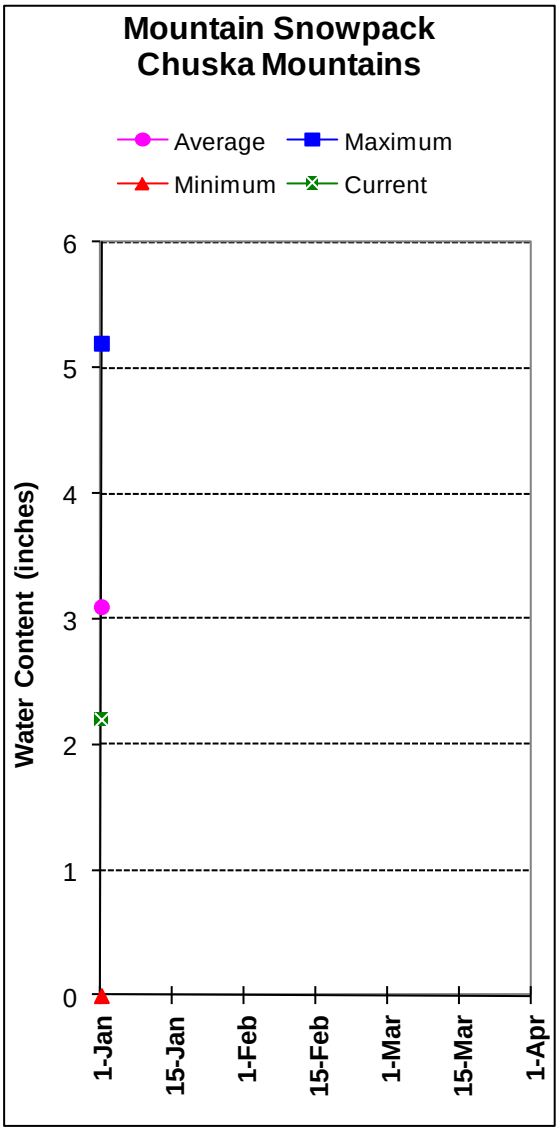
Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
LYMAN RESERVOIR	30.0	9.4	17.9	14.1
SHOW LOW LAKE		NO REPORT		

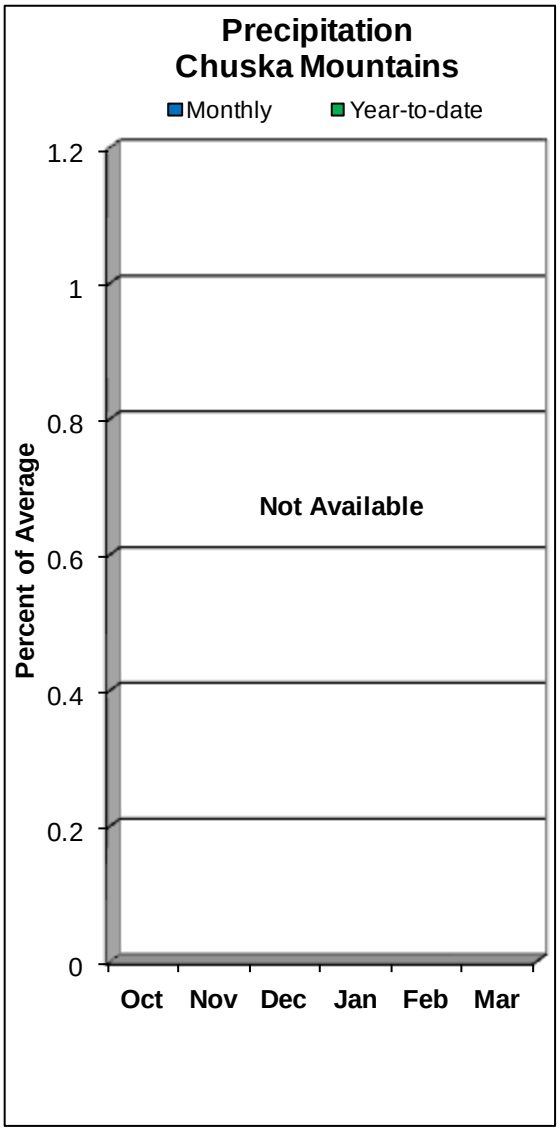
LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - January 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
LITTLE COLORADO - SOUTHERN H	10	144	162
CENTRAL MOGOLLON RIM	4	136	182

CHUSKA MOUNTAINS as of January 1, 2012

Snow survey measurements conducted by staff of the Navajo Water Management Branch show the Chuska snowpack to be at 71% of average. Well below normal (average) runoff is forecast for Captain Tom Wash, Wheatfields Creek, Bowl Canyon Creek, and Kinlichee Creek.





CHUSKA MOUNTAINS as of January 1, 2012

CHUSKA MOUNTAINS
Streamflow Forecasts - January 1, 2012

	<=== Drier ===	Future	Conditions	=== Wetter ===>		
Forecast Pt	========== Chance of Exceeding * ==========					
Forecast Period	90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Captain Tom Wash nr Two Gray Hills							
MAR-MAY	0.13	0.87	2.00	71	3.80	8.20	2.83
Wheatfields Ck nr Wheatfields							
MAR-MAY	0.69	1.36	2.00	69	2.80	4.40	2.90
Bowl Canyon Ck ab Asaayi Lake							
MAR-MAY	0.20	0.47	0.75	75	1.12	1.87	1.00
Kinlichee Ck							
MAR-MAY	0.14	0.52	1.00	59	1.71	3.30	1.70

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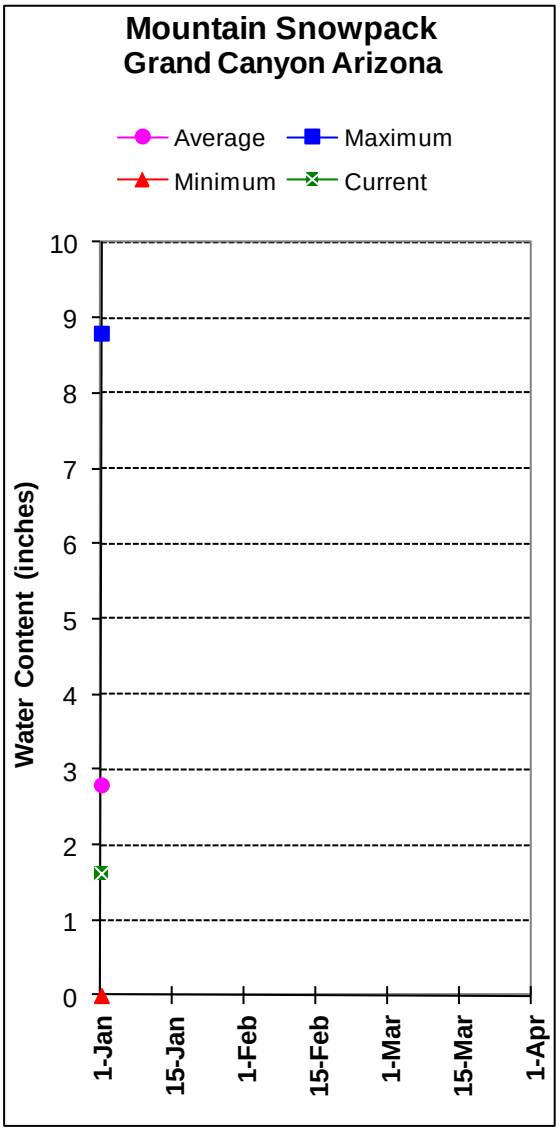
(3) - Median value used in place of average.

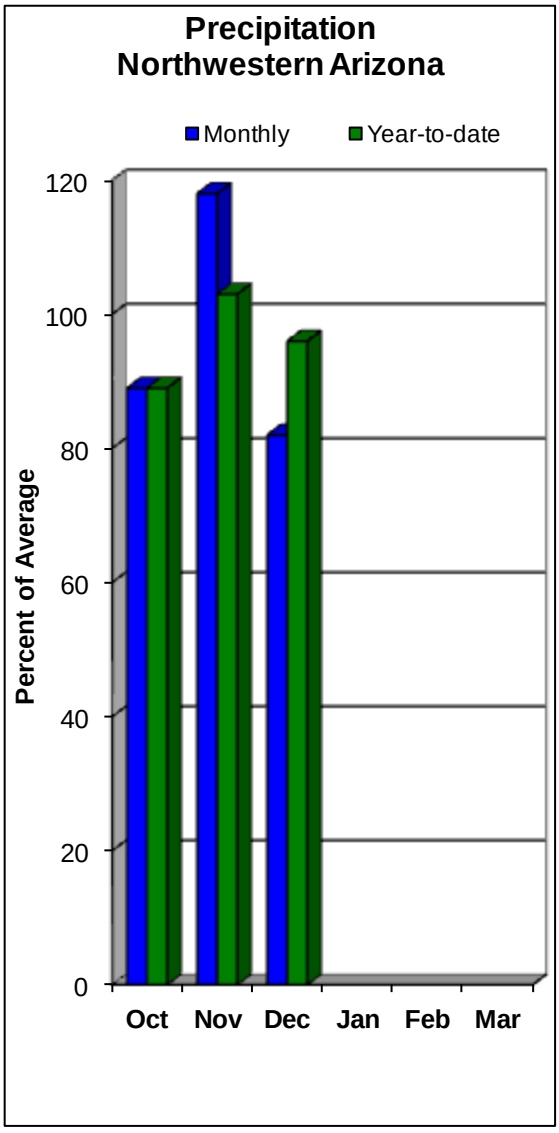
CHUSKA MOUNTAINS
Watershed Snowpack Analysis - January 1, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CHUSKA MOUNTAINS	6	59	71
DEFIANCE PLATEAU	2	0	92

NORTHWESTERN ARIZONA as of January 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 58% of average.





NORTHWESTERN ARIZONA as of January 1, 2012

NORTHWESTERN ARIZONA
Streamflow Forecasts - January 1, 2012

Forecast Pt / Forecast Period	<=== Drier === 90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	Future Conditions 30% (1000AF)	=== Wetter ===> 10% (1000AF)	30 Yr Avg (1000AF)
Virgin R at Littlefield							
APR-JUL	18.0	25	46	62	73	123	74
Lake Powell Inflow (2)							
APR-JUL	2400	3860	5050	64	6400	8670	7930

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

NORTHWESTERN ARIZONA
Reservoir Storage (1000AF) End of December

Reservoir	Usable Capacity	********** Usable Storage ********* This Year	Last Year	Average
LAKE HAVASU	619.0	537.3	578.3	556.4
LAKE MOHAVE	1810.0	1591.1	1665.5	1596.6
LAKE MEAD	26159.0	14897.0	10302.0	21775.0
LAKE POWELL	24322.0	15959.0	14457.0	18933.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - January 1, 2012

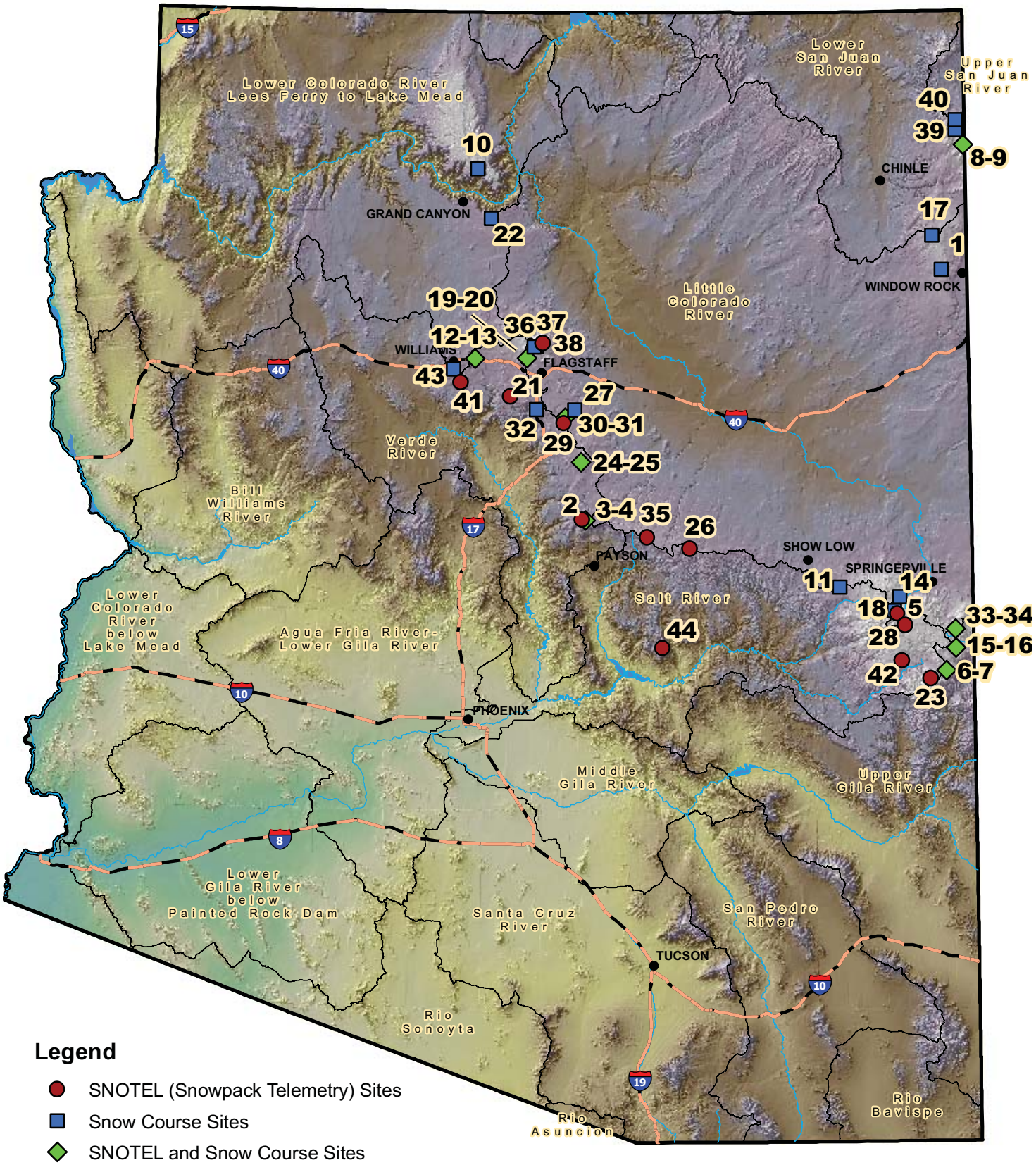
Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
GRAND CANYON	2	37	58

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

JANUARY 1, 2012

MAP NUM.	SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
1.	ARBABS FOREST (AK)	7680	12/27	6	1.2	.0	1.2
2.	BAKER BUTTE SNOTEL	7330	1/01	15	4.3	2.8	2.3
3.	BAKER BUTTE #2	7700	12/29	26	8.0	2.6	4.2
4.	BAKER BUTTE SMT SNTL	7700	1/01	28	8.1	7.6	-
5.	BALDY SNOTEL	9220	1/01	17	4.7	3.0	3.5
6.	BEAVER HEAD	8000	1/03	10	2.1	.0	1.6
7.	BEAVER HEAD SNOTEL	7990	1/01	12	3.4	1.4	1.9
8.	BEAVER SPRING	9220	12/28	9	2.0	4.6	3.9
9.	BEAVER SPRING SNOTEL	9200	1/01	9	3.2	6.1	-
10.	BRIGHT ANGEL	8400	1/02	7	2.8	7.0	3.9
11.	BUCK SPRING	7400	12/30	12	4.4	1.9	2.7
12.	CHALENDER	7100	12/28	5	1.0	2.0	1.3
13.	CHALENDER SNOTEL	7100	1/01	5	1.3	2.9	-
14.	CHEESE SPRINGS	8600	12/30	17	3.6	2.2	2.5
15.	CORONADO TRL SNOTEL	8400	1/01	10	3.0	2.2	1.8
16.	CORONADO TRAIL	8350	1/03	9	2.6	.0	1.6
17.	FLUTED ROCK	7800	12/27	7	1.2	.0	1.4
18.	FORT APACHE	9160	12/30	25	6.1	4.0	3.8
19.	FORT VALLEY	7350	12/29	5	1.2	1.1	1.2
20.	FORT VALLEY SNOTEL	7350	1/01	3	1.0	2.1	-
21.	FRY SNOTEL	7220	1/01	14	3.2	5.4	2.8
22.	GRAND CANYON	7500	1/01	2	.4	1.7	1.6
23.	HANNAGAN MDWS SNOTEL	9020	1/01	25	6.6	5.5	5.5
24.	HAPPY JACK	7630	12/30	9	2.2	1.8	2.0
25.	HAPPY JACK SNOTEL	7630	1/01	12	3.1	7.0	2.1
26.	HEBER SNOTEL	7640	1/01	16	4.5	3.8	2.3
27.	LAKE MARY	6930	12/29	12	3.0	.7	1.5
28.	MAVERICK FORK SNOTEL	9200	1/01	18	4.9	5.4	4.2
29.	MORMON MTN SNOTEL	7500	1/01	8	2.5	4.0	2.4
30.	MORMON MT. SUMMIT #2	8470	12/29	20	5.1	6.0	4.8
31.	MORMON MTN SUMMIT SN	8500	1/01	16	4.0	6.4	-
32.	NEWMAN PARK	6750	12/29	9	2.1	.5	.9
33.	NUTRIOSO	8500	1/03	6	1.6	.0	1.0
34.	NUTRIOSO SNOTEL	8500	1/01	1	1.2	1.2	-
35.	PROMONTORY SNOTEL	7900	1/01	26	7.6	7.1	4.6
36.	SNOW BOWL #1 ALT.	10260	12/29	21	5.2	6.4	5.7
37.	SNOW BOWL #2	11000	12/29	22	4.8	8.8	9.0
38.	SNOWSLIDE CYN SNOTEL	9750	1/01	28	6.6	11.7	7.0
39.	TSAILE CANYON #1	8160	12/27	8	1.2	2.5	2.6
40.	TSAILE CANYON #3	8920	12/27	13	2.4	4.7	3.6
41.	WHITE HORSE SNOTEL	7180	1/01	5	1.8	3.9	2.0
42.	WILDCAT SNOTEL	7850	1/01	9	2.9	2.0	1.7
43.	WILLIAMS SKI RUN	7720	12/28	16	3.6	5.0	3.5
44.	WORKMAN CREEK SNOTEL	6900	1/01	20	7.2	4.2	2.9

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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