



Natural
Resources
Conservation
Service

Arizona

Basin Outlook Report

February 15, 2011



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 15, 2011

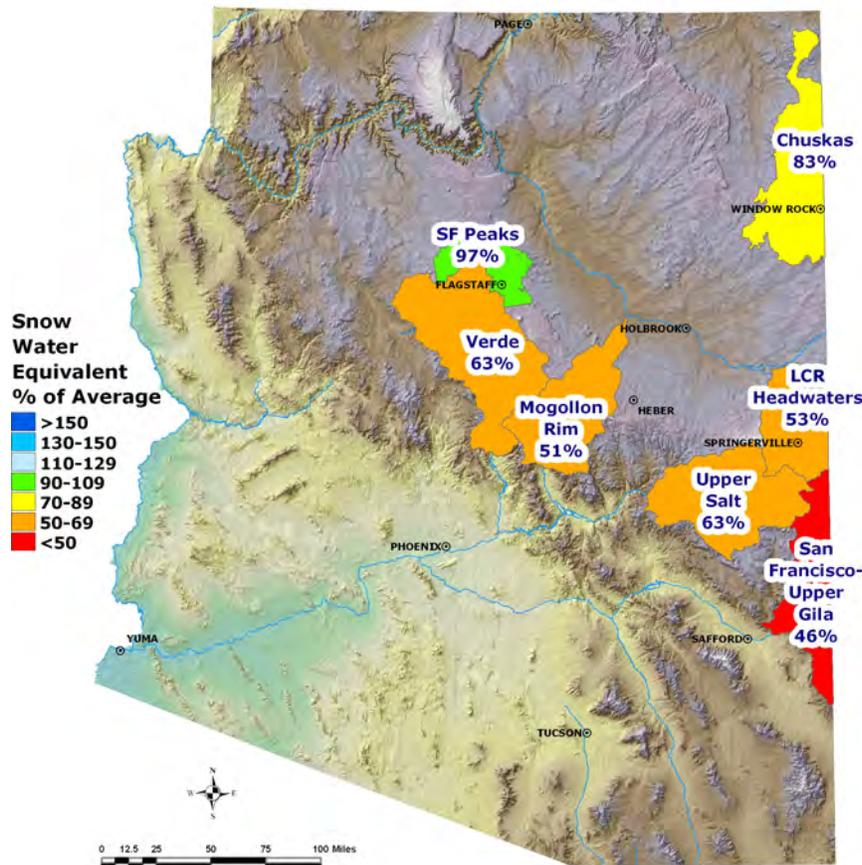
SUMMARY

As of February 15, snowpack levels are well below normal in all of the basins, now including the Verde River Basin. Precipitation for the first half of February was well below normal throughout the basins. The Salt and Verde River reservoir system stands at 87 percent of capacity, while San Carlos Reservoir is at 13 percent of capacity. The mid-month forecast continues to call for well below normal runoff in all of the basins for the spring runoff period.

SNOWPACK

Snow water equivalent levels are well below normal, ranging from a low of 46 percent of average in the San Francisco-Upper Gila River Basin to a high of 63 percent of average in the Salt and Verde River Basins. The statewide snowpack is also well below normal at 67 percent of average.

**Arizona
Snow Water Equivalent
as of February 15, 2011**

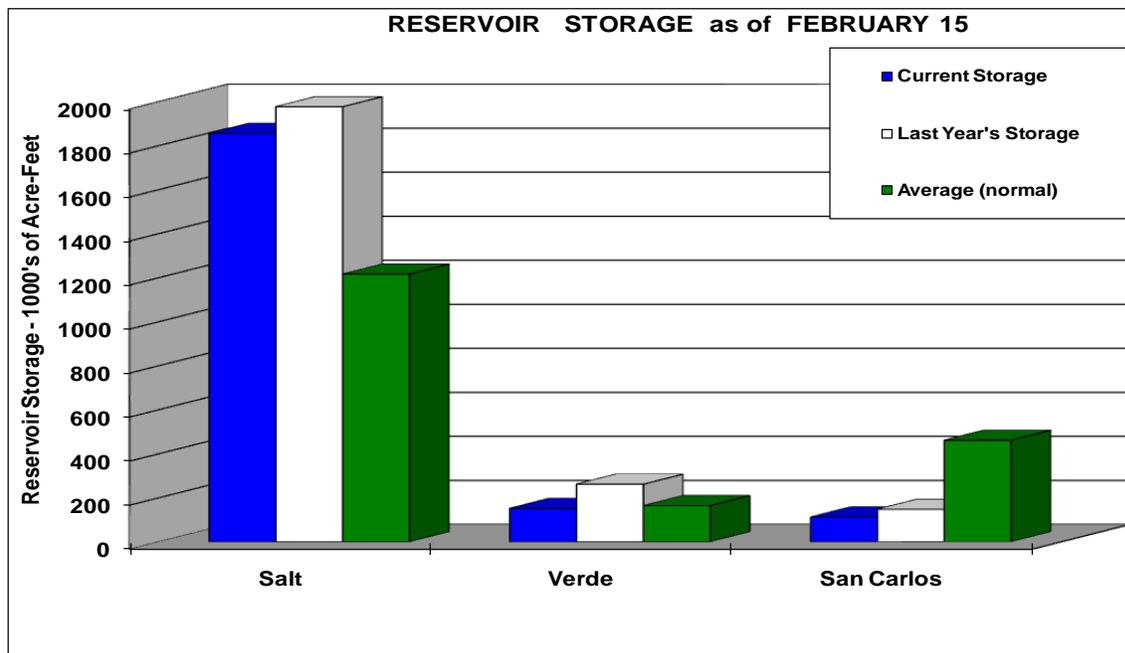


PRECIPITATION

Mountain data from NRCS SNOTEL sites and Cooperator precipitation gages show that precipitation for the first half of February was well below normal, ranging from only 4 percent of average in the Verde River Basin to 37 percent of average in the San Francisco-Upper Gila River Basin. Cumulative precipitation since October 1 is also well below normal in all of the basins, except the Verde River Basin, which is at about normal for the water year. 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 15, the Salt and Verde River reservoir system stands at 87 percent of capacity. San Carlos Reservoir, however, remains well below normal at only 13 percent of capacity.



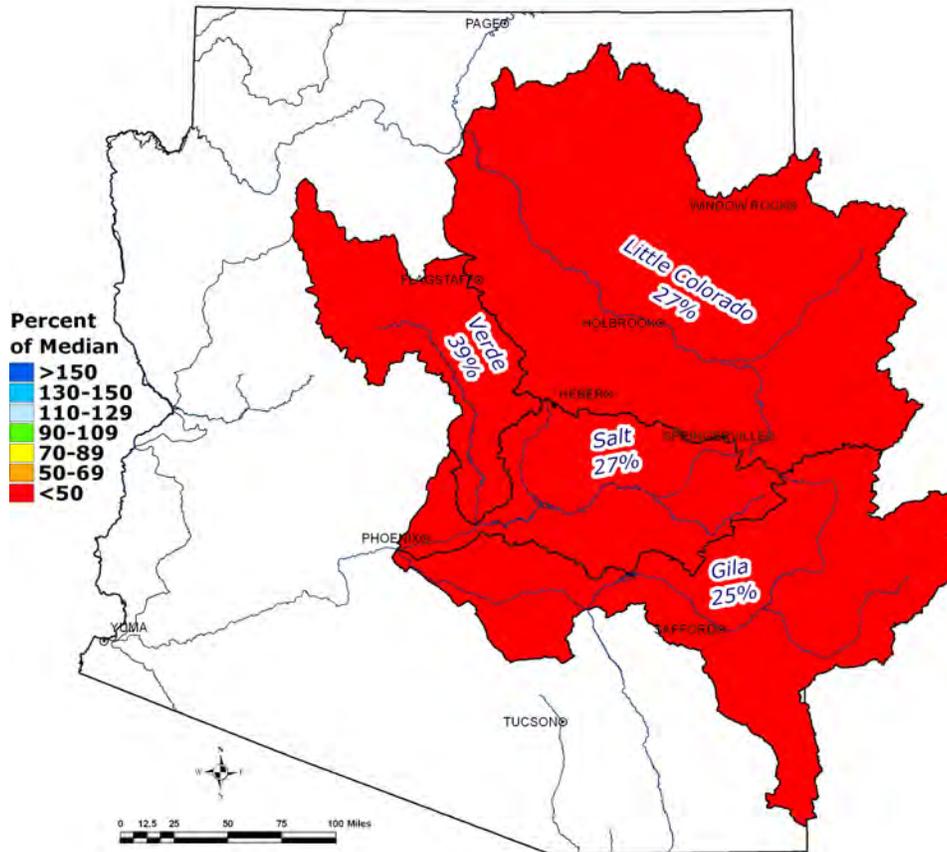
Key storage volumes displayed in thousands of acre-feet (x1000):

<u>Reservoir</u>	<u>Current Storage</u>	<u>Last Year Storage</u>	<u>30-Year Average</u>	<u>Storage Capacity</u>
Salt River System	1855.5	1976.7	1216.4	2025.8
Verde River System	152.0	261.9	164.6	287.4
San Carlos Reservoir	112.4	147.7	461.4	875.0
Lyman Lake	18.0	11.1	14.8	30.0
Lake Pleasant	710.3	743.7	----	1108.6
Lake Havasu	579.2	587.0	553.6	619.0
Lake Mohave	1646.0	1731.7	1685.2	1810.0
Lake Mead	10963.0	11702.0	22072.0	26159.0
Lake Powell	13493.0	13888.0	18448.0	24322.0

STREAMFLOW

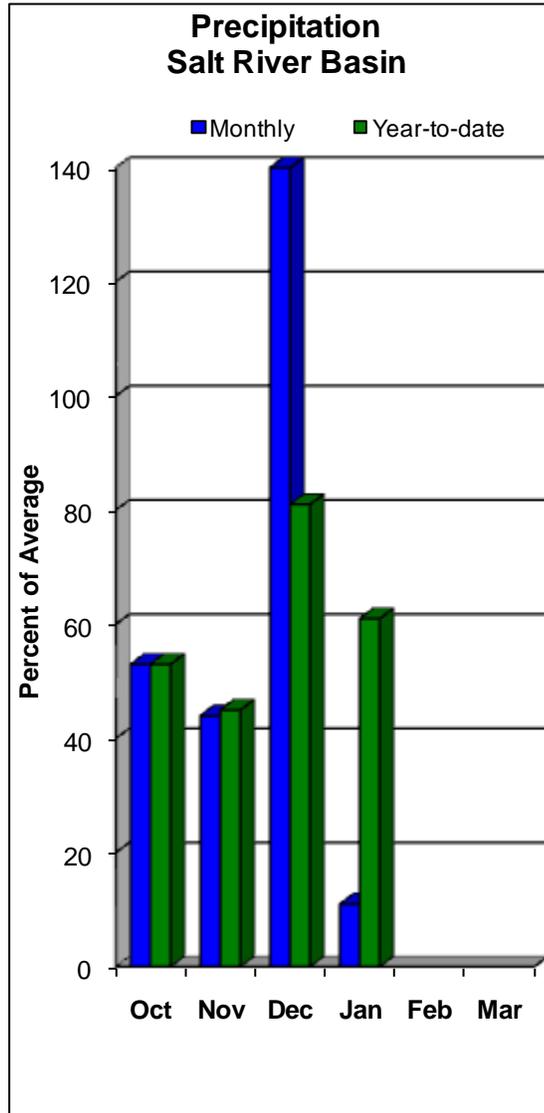
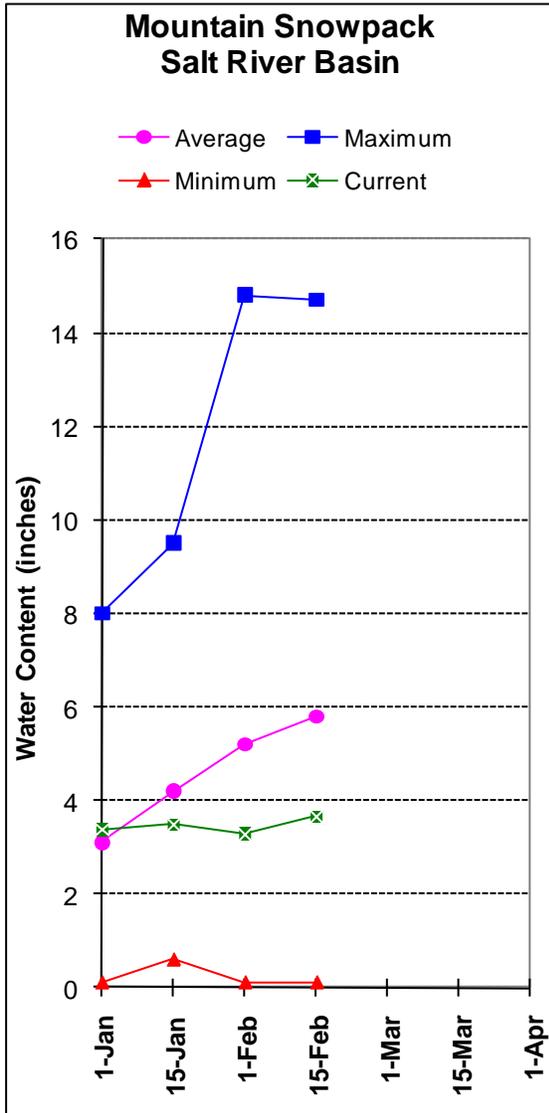
As of February 15, the forecast continues to call for well below normal streamflow for the spring runoff period, ranging from 25 percent of median in the Gila River near Solomon to 39 percent of median in the Verde River above Horseshoe Dam. The mid-month streamflow forecasts reflect the existing dry conditions in the basins, as well as predictions for below normal precipitation to continue into the spring. Please refer to the basin forecast tables found in this report for more information regarding water supply forecasts.

Arizona Spring Streamflow Forecasts as of February 15, 2011



SALT RIVER BASIN as of February 15, 2011

Well below normal streamflow levels are forecast for the basin. In the Salt River, near Roosevelt, the forecast calls for 27% of median streamflow through May, while at Tonto Creek, the forecast calls for 34% of median streamflow through May. Snow survey measurements show the Salt snowpack to be at 63% of average.



SALT RIVER BASIN
Streamflow Forecasts - February 15, 2011

Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Med (1000AF)
	Chance of Exceeding * =====						
	90% (1000AF)	70% (1000AF)	50% (1000AF) (% MED.)	30% (1000AF)	10% (1000AF)		
Salt R nr Roosevelt							
F15-MAY	45	58	85	27	119	184	315
FEBRUARY			10.0	22			46
Tonto Ck ab Gun Ck nr Roosevelt							
F15-MAY	4.0	4.5	10.0	35	18.8	40	29
FEBRUARY			2.0	16			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.

SALT RIVER BASIN
Reservoir Storage (1000AF) Mid-February

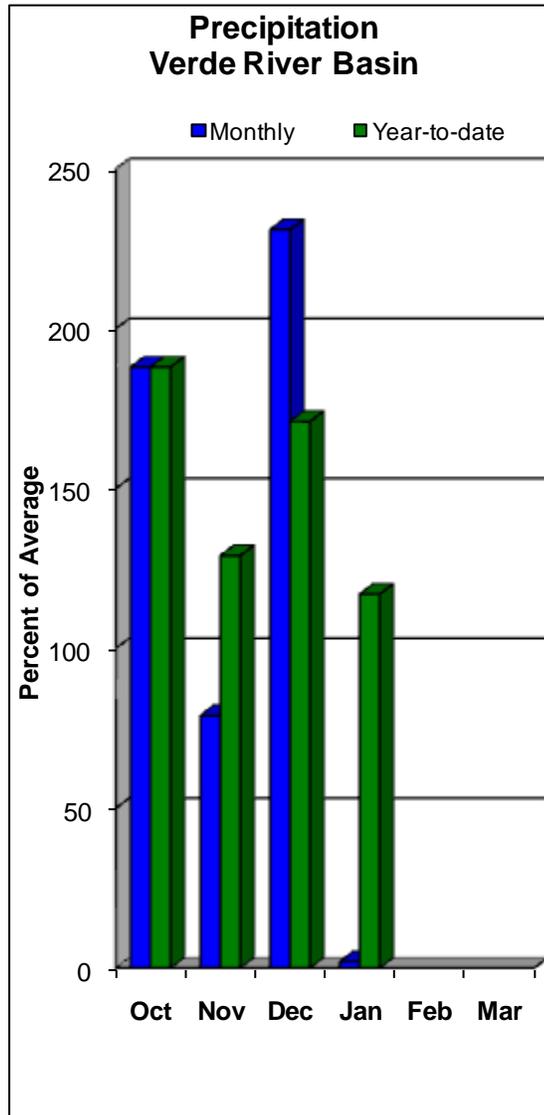
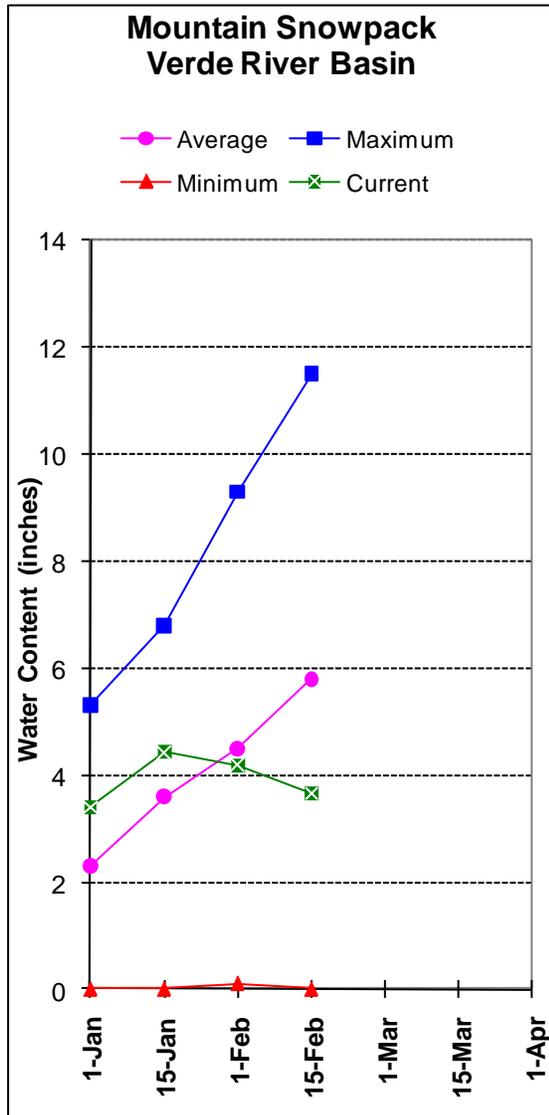
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
SALT RIVER RES SYSTEM	2025.8	1855.5	1976.7	1231.5

SALT RIVER BASIN
Watershed Snowpack Analysis - February 15, 2011

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SALT RIVER BASIN	8	29	63

VERDE RIVER BASIN as of February 15, 2011

Well below normal streamflow levels are forecast for the basin. In the Verde River, at Horseshoe Dam, the forecast calls for 39% of median streamflow through May. Snow survey measurements show the Verde snowpack to be at 63% of average.



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VERDE RIVER BASIN
Streamflow Forecasts - February 15, 2011

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Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Med (1000AF)
	===== Chance of Exceeding * =====						
	90%	70%	50%	30%	10%		
	(1000AF)	(1000AF)	(1000AF) (% MED.)	(1000AF)	(1000AF)		
=====							
Verde R bl Tangle Ck ab Horseshoe Dam							
F15-MAY	38	45	65	39	98	164	165
FEBRUARY			14.0	40			35

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* 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.

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VERDE RIVER BASIN
Reservoir Storage (1000AF) Mid-February

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Reservoir	Usable	***** Usable Storage *****		
	Capacity	This Year	Last Year	Average
VERDE RIVER RES SYSTEM	287.4	152.0	261.9	163.5

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VERDE RIVER BASIN
Watershed Snowpack Analysis - February 15, 2011

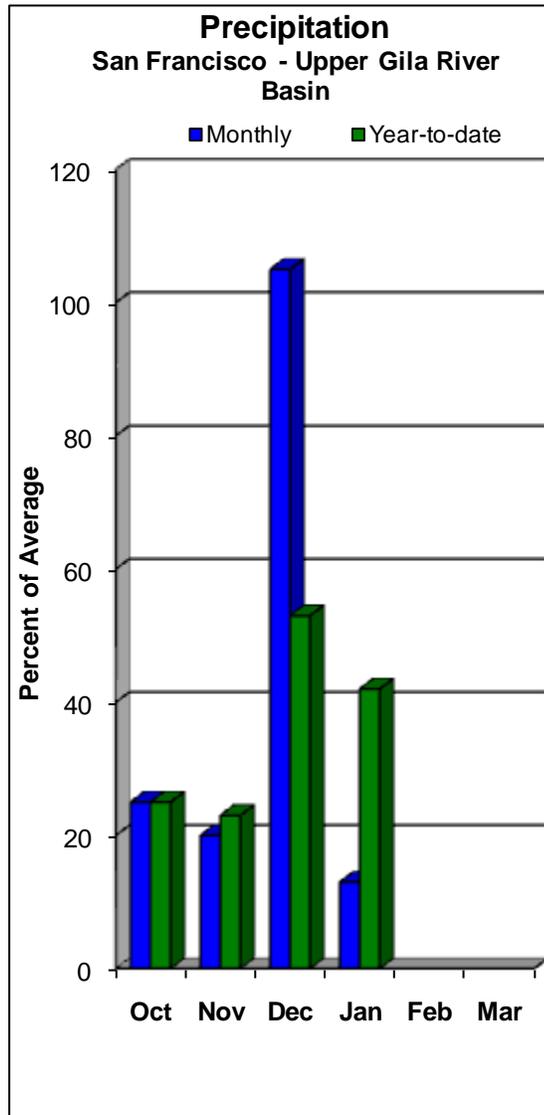
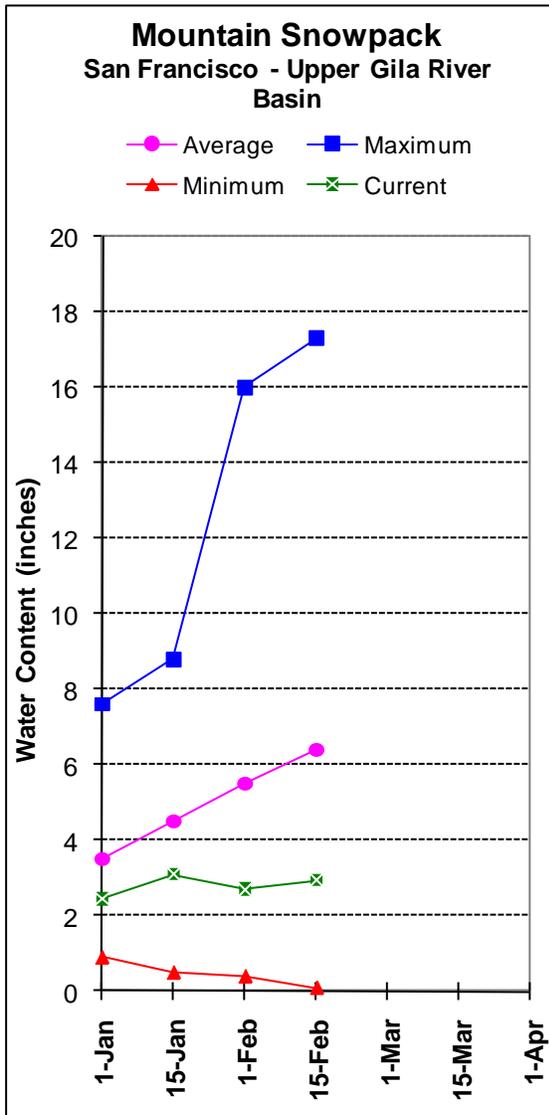
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Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
VERDE RIVER BASIN	11	28	63
SAN FRANCISCO PEAKS	3	52	97

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SAN FRANCISCO-UPPER GILA RIVER BASIN as of February 15, 2011

Well below normal streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 26% of median streamflow levels through May. In the Gila River, near Solomon, the forecast calls for 25% of median streamflow levels through May. At San Carlos Reservoir, inflow to the lake is forecast at 13% of median through May. Snow survey measurements show the snowpack for this basin to be at 46% of average.



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SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - February 15, 2011

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Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Med (1000AF)
	==== Chance of Exceeding * =====						
	90% (1000AF)	70% (1000AF)	50% (1000AF) (% MED.)	30% (1000AF)	10% (1000AF)		
San Francisco R at Clifton							
F15-MAY	10.5	12.0	14.0	26	35	67	53
Gila R nr Solomon							
F15-MAY	25	27	30	25	81	100	122
FEBRUARY			10.0	42			24
San Carlos Reservoir Inflow (2)							
F15-MAY	4.0	7.0	10.0	13	41	87	79

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* 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.

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SAN FRANCISCO - UPPER GILA RIVER BASIN
Reservoir Storage (1000AF) Mid-February

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Reservoir	Usable	***** Usable Storage *****		
	Capacity	This Year	Last Year	Average
SAN CARLOS	875.0	112.4	147.7	461.4
PAINTED ROCK DAM		NO REPORT		

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SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - February 15, 2011

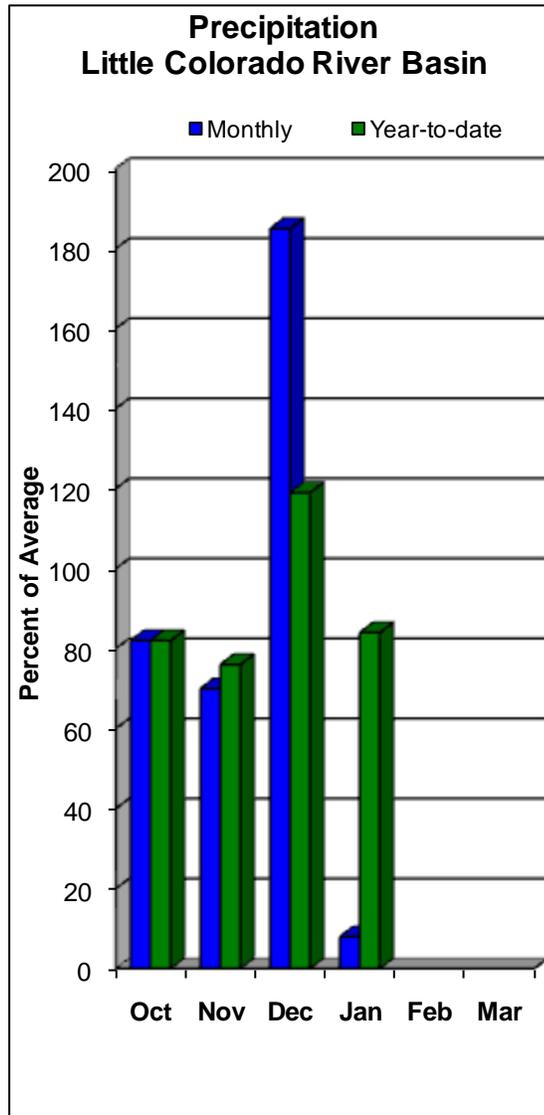
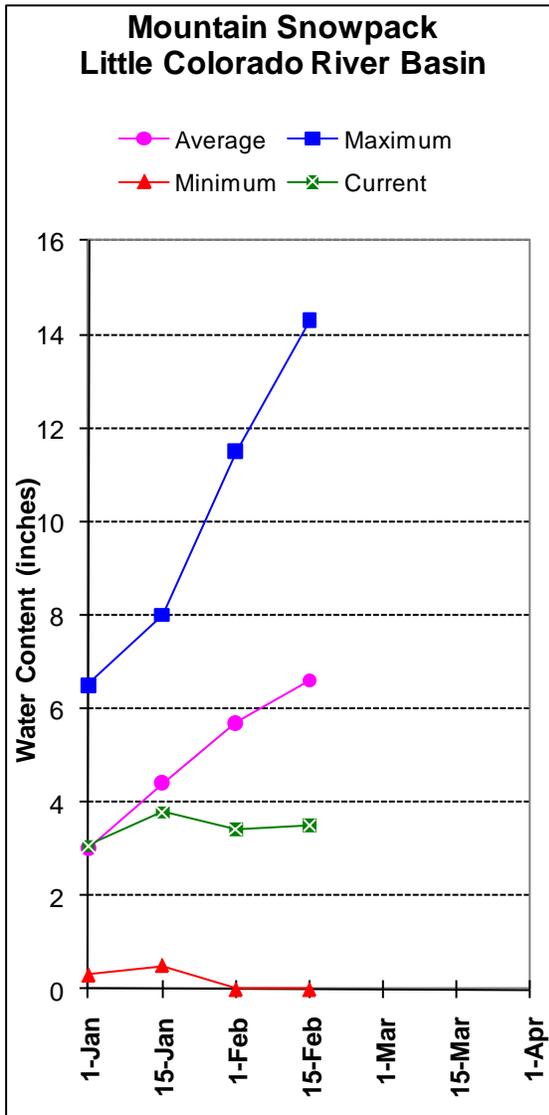
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Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
SAN FRANCISCO - UPPER GILA R	9	20	46

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LITTLE COLORADO RIVER BASIN as of February 15, 2011

Well below normal streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 25% of median streamflow through June, while at Woodruff, the forecast calls for 27% of median streamflow through May. Snowpacks along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 53% and 51% of average, respectively.



LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - February 15, 2011

Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Med (1000AF)
	Chance of Exceeding * =====						
	90% (1000AF)	70% (1000AF)	50% (1000AF) (% MED.)	30% (1000AF)	10% (1000AF)		
Little Colorado R ab Lyman Lake							
FEB-JUN	0.47	1.12	1.80	25	2.70	4.50	7.10
Little Colorado R at Woodruff							
FEB-MAY	0.30	0.50	0.75	27	2.50	5.00	2.80
Blue Ridge Reservoir Inflow							
FEB-MAY	1.0	2.4	3.8	23	5.4	8.3	16.3
Lake Mary Reservoir Inflow							
FEB-MAY	0.32	0.77	1.25	26	1.89	3.20	4.80

* 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.

LITTLE COLORADO RIVER BASIN
Reservoir Storage (1000AF) Mid-February

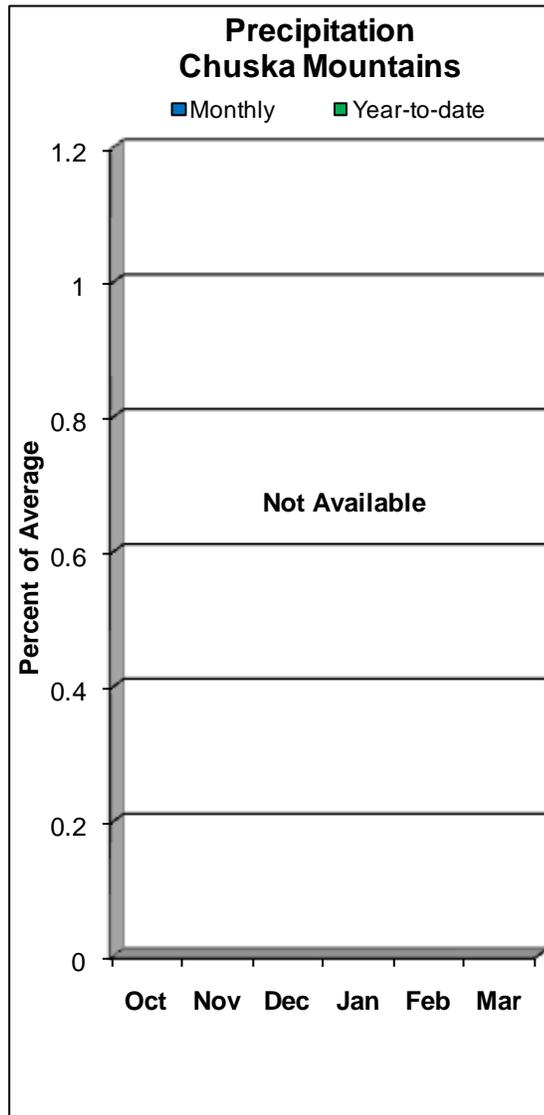
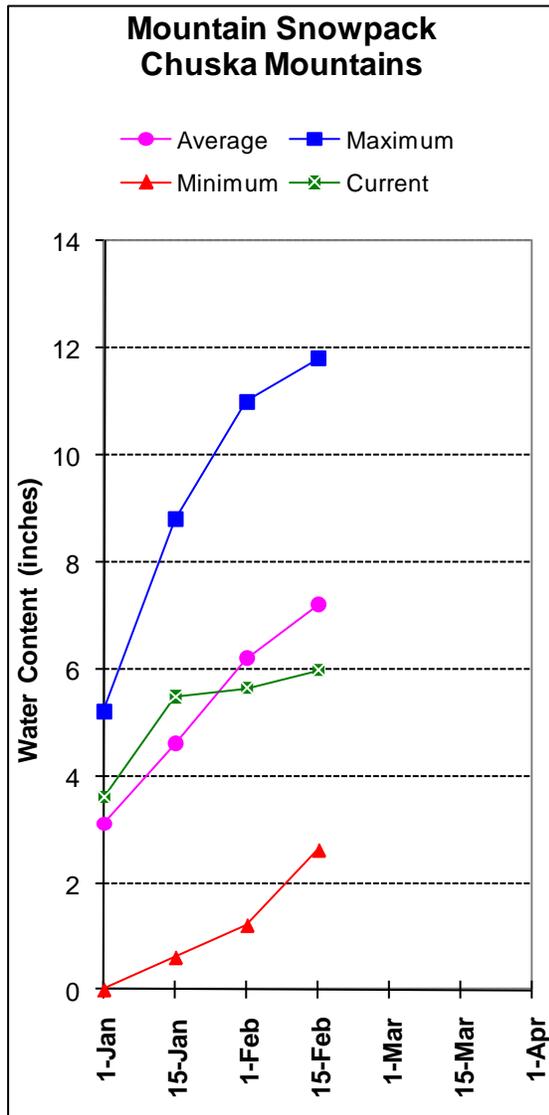
Reservoir	Usable Capacity	***** Usable Storage *****		
		This Year	Last Year	Average
LYMAN RESERVOIR	30.0	18.0	11.1	15.4
SHOW LOW LAKE		NO REPORT		

LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - February 15, 2011

Watershed	Number of Data Sites	This Year as Percent of	
		Last Year	Average
LITTLE COLORADO - SOUTHERN H	9	25	53
CENTRAL MOGOLLON RIM	4	24	51

CHUSKA MOUNTAINS as of February 15, 2011

Snow survey measurements conducted by staff of the Navajo Water Management Branch show the Chuska snowpack to be at 83% of average. Slightly below normal runoff is forecast for Captain Tom Wash, Wheatfields Creek, and Bowl Canyon Creek. Well below normal runoff is forecast for Kinlichee Creek.



CHUSKA MOUNTAINS
Streamflow Forecasts - February 15, 2011

Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>					30 Yr Avg (1000AF)
	Chance of Exceeding * =====					
	90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)	
Captain Tom Wash nr Two Gray Hills						
MAR-MAY	0.20	1.14	2.50	88	4.60	9.60 2.83
Wheatfields Ck nr Wheatfields						
MAR-MAY	1.09	1.84	2.50	86	3.30	4.80 2.90
Bowl Canyon Ck ab Asaayi Lake						
MAR-MAY	0.24	0.56	0.90	90	1.35	2.20 1.00
Kinlichee Ck						
MAR-MAY	0.15	0.53	1.00	59	1.69	3.20 1.70

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

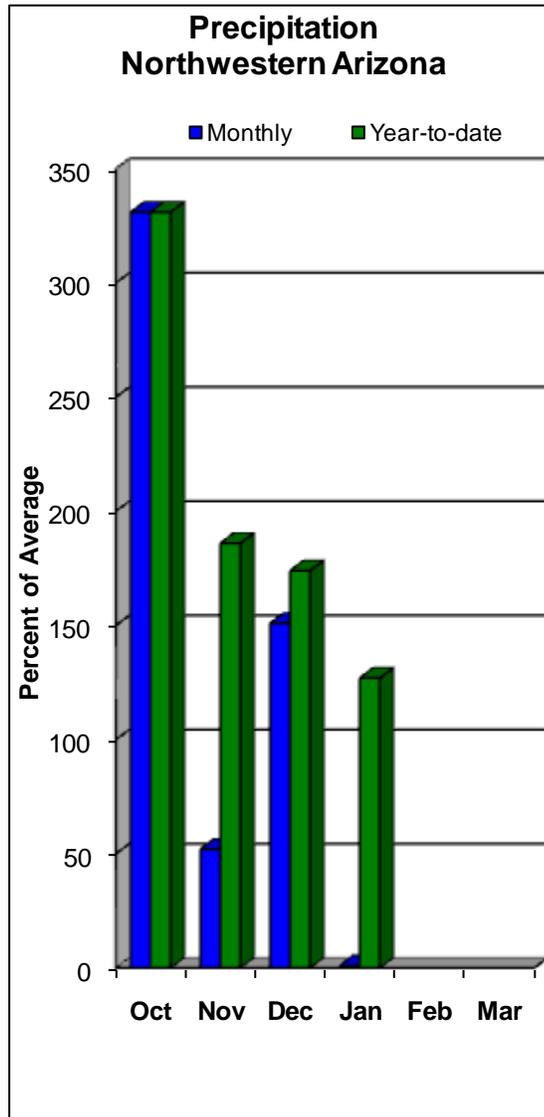
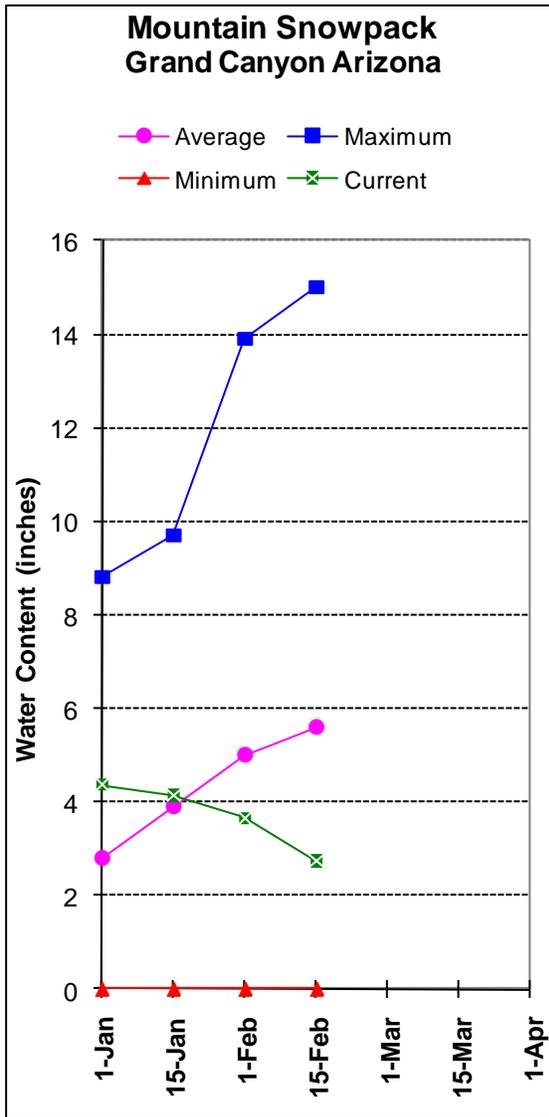
The average is computed for the 1971-2000 base period.

CHUSKA MOUNTAINS
Watershed Snowpack Analysis - February 15, 2011

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CHUSKA MOUNTAINS	6	44	83
DEFIANCE PLATEAU	2	19	46

NORTHWESTERN ARIZONA as of February 15, 2011

On the Colorado River, slightly above normal inflow to Lake Powell is forecast at 114% 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 49% of average.



NORTHWESTERN ARIZONA
Streamflow Forecasts - February 15, 2011

Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Avg (1000AF)
	Chance of Exceeding * =====						
	90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)		
Lake Powell Inflow (2)							
APR-JUL	5800	7710	9000	114	10300	12200	7930

* 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.

(2) - The value is natural volume - actual volume may be affected by upstream water management.

NORTHWESTERN ARIZONA
Reservoir Storage (1000AF) Mid-February

Reservoir	Usable Capacity	***** Usable Storage *****		
		This Year	Last Year	Average
LAKE HAVASU	619.0	579.2	587.0	552.4
LAKE MOHAVE	1810.0	1646.0	1731.7	1675.1
LAKE MEAD	26159.0	10963.0	11702.0	22122.0
LAKE POWELL	24322.0	13493.0	13888.0	18236.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - February 15, 2011

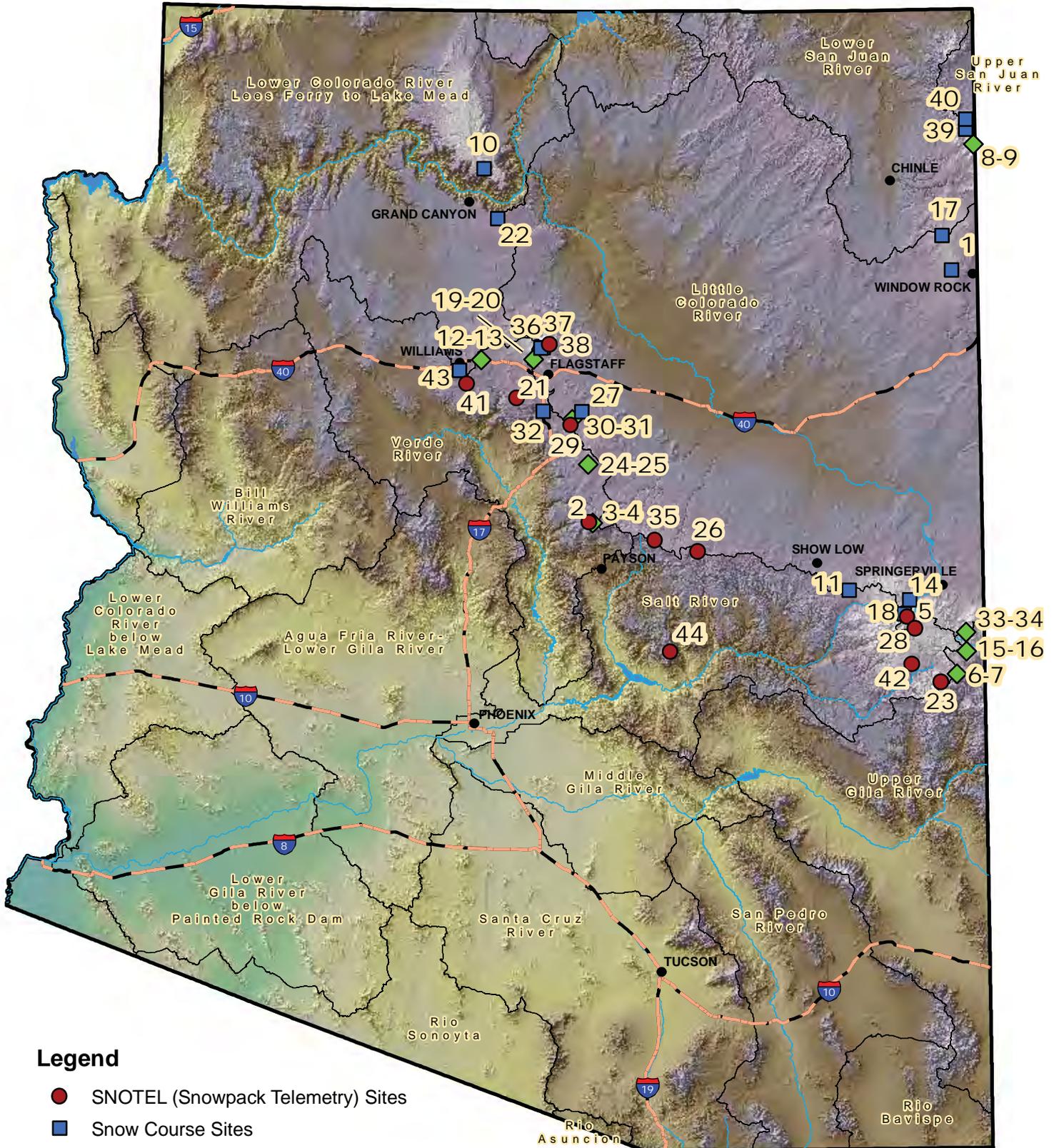
Watershed	Number of Data Sites	This Year as Percent of	
		Last Year	Average
GRAND CANYON	2	27	49

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

FEBRUARY 15, 2011

MAP NUM.	SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
1.	ARBABS FOREST (AK)	7680	2/14	4	1.1	7.2	2.7
2.	BAKER BUTTE SNOTEL	7330	2/15	4	1.4	13.7	5.7
3.	BAKER BUTTE #2	7700	2/14	17	6.3	20.1	10.7
4.	BAKER BUTTE SMT SNTL	7700	2/15	23	7.0	19.5	-
5.	BALDY SNOTEL	9220	2/15	13	4.0	13.5	7.0
6.	BEAVER HEAD	8000	2/14	2	.8	10.7	2.9
7.	BEAVER HEAD SNOTEL	7990	2/15	7	1.8	10.6	3.3
8.	BEAVER SPRING	9220	no report			15.2	8.7
9.	BEAVER SPRING SNOTEL	9200	2/15	20	5.3	12.5	-
10.	BRIGHT ANGEL	8400	2/14	15	5.5	13.7	8.7
11.	BUCK SPRING	7400	2/14	3	1.0	8.5	4.3
12.	CHALENDER	7100	2/14	5	1.9	8.6	3.1
13.	CHALENDER SNOTEL	7100	2/15	9	3.1	9.2	-
14.	CHEESE SPRINGS	8600	2/14	14	3.1	9.7	5.0
15.	CORONADO TRL SNOTEL	8400	2/15	3	2.4	11.1	3.4
16.	CORONADO TRAIL	8400	2/14	0	.0	11.4	2.9
17.	FLUTED ROCK	7800	2/14	7	1.7	7.2	3.4
18.	FORT APACHE	9160	2/14	21	5.5	14.3	6.8
19.	FORT VALLEY	7350	2/14	1	.4	8.7	2.7
20.	FORT VALLEY SNOTEL	7350	2/15	1	.1	9.4	-
21.	FRY SNOTEL	7220	2/15	18	5.5	15.2	7.0
22.	GRAND CANYON	7500	2/14	0	.0	6.7	2.6
23.	HANNAGAN MDWS SNOTEL	9020	2/15	24	6.5	16.1	10.2
24.	HAPPY JACK	7630	2/10	9	3.4	12.3	4.8
25.	HAPPY JACK SNOTEL	7630	2/15	20	6.7	14.1	4.6
26.	HEBER SNOTEL	7640	2/15	3	2.8	15.1	5.5
27.	LAKE MARY	6970	2/14	3	.9	10.4	3.2
28.	MAVERICK FORK SNOTEL	9200	2/15	18	6.0	14.8	8.3
29.	MORMON MTN SNOTEL	7500	2/15	8	3.1	16.7	6.2
30.	MORMON MT. SUMMIT #2	8470	2/14	24	8.5	19.9	12.8
31.	MORMON MTN SUMMIT SN	8500	2/15	19	5.6	19.6	-
32.	NEWMAN PARK	6750	2/14	1	.4	9.8	3.0
33.	NUTRIOSO	8500	2/14	0	.0	6.4	1.7
34.	NUTRIOSO SNOTEL	8500	2/15	0	.0	5.0	-
35.	PROMONTORY SNOTEL	7900	2/15	18	6.7	21.9	11.5
36.	SNOW BOWL #1 ALT.	10260	2/10	30	10.6	21.6	10.6
37.	SNOW BOWL #2	11000	2/10	33	11.4	22.4	14.6
38.	SNOWSLIDE CYN SNTL	9750	2/15	37	12.3	21.9	10.0
39.	TSAILE CANYON #1	8160	2/11	21	5.3	13.3	6.4
40.	TSAILE CANYON #3	8920	2/11	26	7.5	13.5	8.5
41.	WHITE HORSE SNOTEL	7180	2/15	0	2.5	11.3	5.1
42.	WILDCAT SNOTEL	7850	2/15	1	1.9	9.4	4.1
43.	WILLIAMS SKI RUN	7720	2/14	21	6.4	17.5	7.8
44.	WORKMAN CREEK SNOTEL	6900	2/15	9	4.1	16.4	5.9

Arizona Snow Survey Data Sites



Legend

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

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

