



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Arizona

Basin Outlook Report

February 15, 2012



Issued by

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

Released by

Keisha L. Tatem
State Conservationist
Natural Resources Conservation Service
Phoenix, Arizona

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:

Dino DeSimone
Water Supply Specialist
230 N. First Ave., Suite 509
Phoenix, AZ 85003-1706
Phone: (602) 280-8786
Email: dino.desimone@az.usda.gov

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ARIZONA Basin Outlook Report as of February 15, 2012

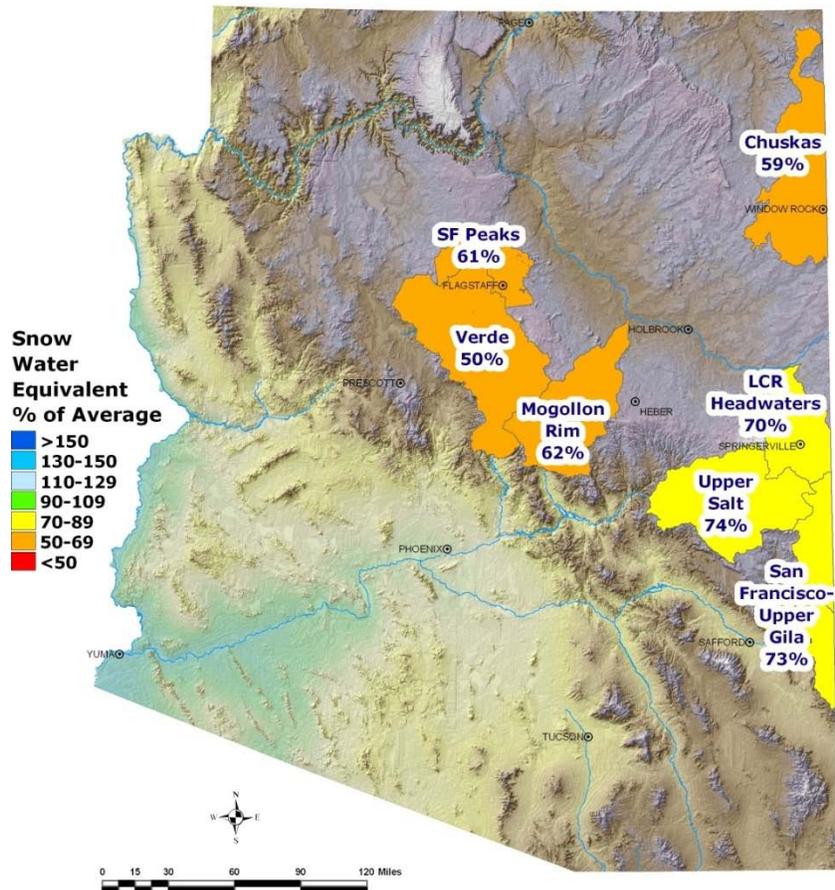
SUMMARY

As of February 15, snowpack levels are below normal to well below normal in all of the major basins. Precipitation for the first half of February was well below normal throughout the basins. The Salt and Verde River reservoir system stands at 66 percent of capacity, while San Carlos Reservoir is at 3 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 below normal to well below normal, ranging from a low of 50 percent of average in the Verde River Basin to a high of 74 percent of average in the Salt River Basin. The statewide snowpack is also well below normal at 57 percent of average.

**Arizona
Snow Water Equivalent
as of February 15, 2012**

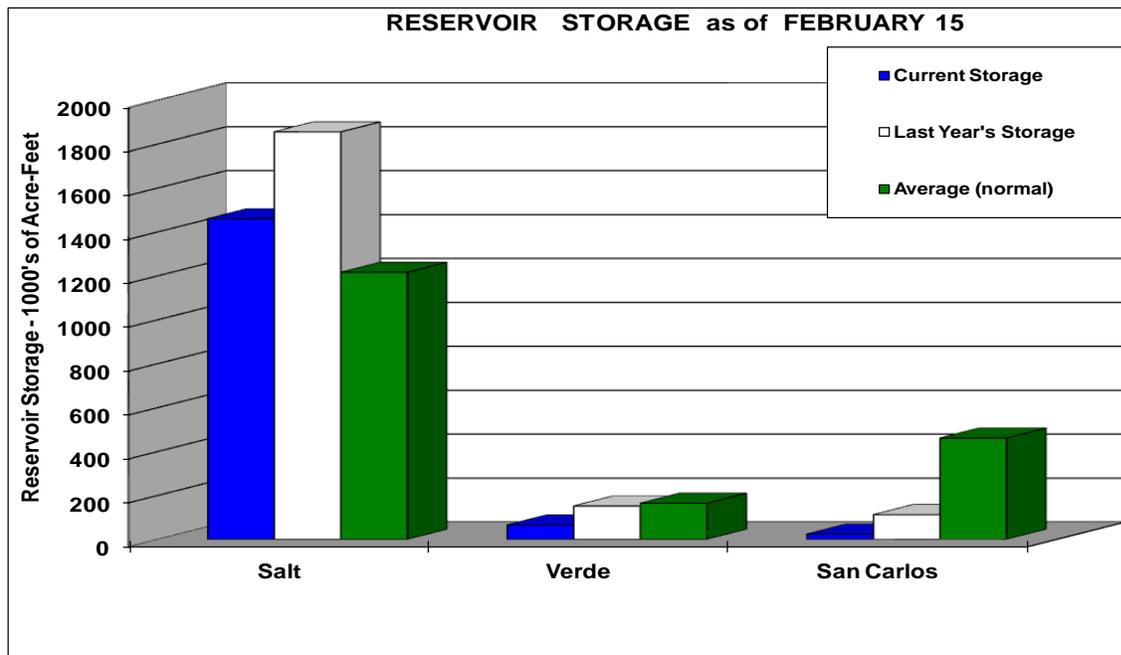


PRECIPITATION

Mountain data from NRCS SNOTEL sites and Cooperator precipitation gages show that precipitation for the first half of February was well below normal in all major basins. Cumulative precipitation since October 1 is below normal throughout the 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 15, the Salt and Verde River reservoir system stands at 66 percent of capacity. San Carlos Reservoir remains well below normal at only 3 percent of capacity.



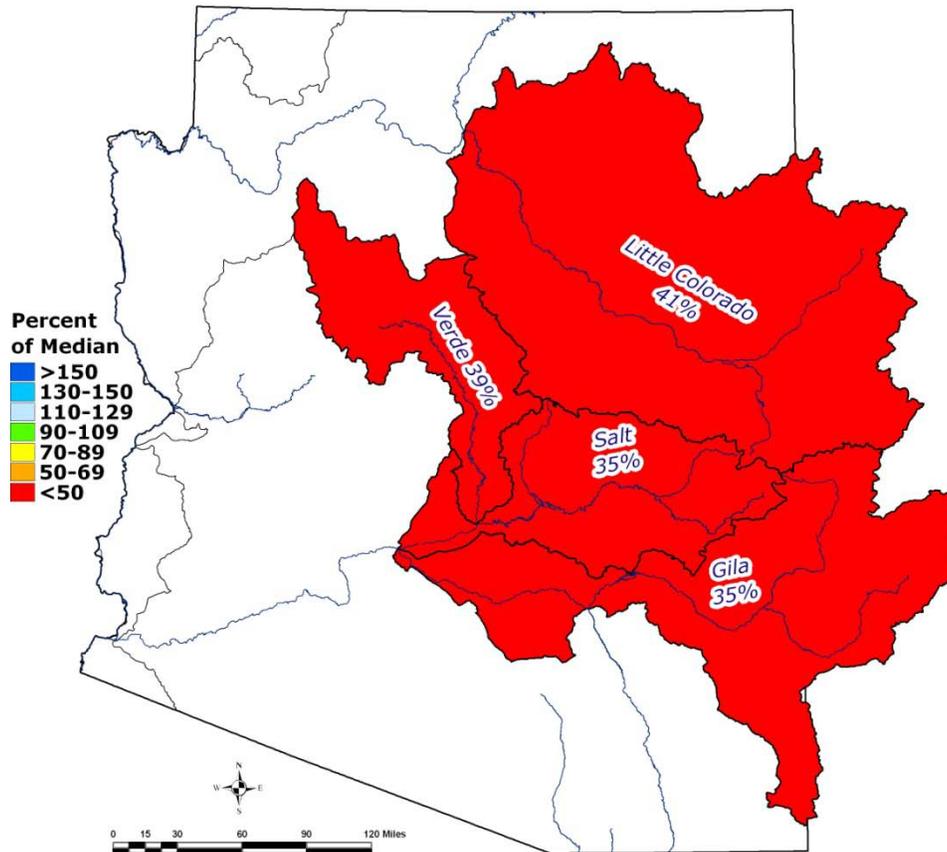
Key storage volumes displayed in thousands of acre-feet (x1000):

<u>Reservoir</u>	<u>Current Storage</u>	<u>Last Year Storage</u>	<u>30-Year Average</u>	<u>Storage Capacity</u>
Salt River System	1459.9	1855.5	1216.4	2025.8
Verde River System	65.4	152.0	164.6	287.4
San Carlos Reservoir	24.0	112.4	461.4	875.0
Lyman Lake	9.5	18.0	14.8	30.0
Lake Havasu	589.9	579.2	553.6	619.0
Lake Mohave	1631.8	1646.0	1685.2	1810.0
Lake Mead	14974.0	10963.0	22072.0	26159.0
Lake Powell	15546.0	13493.0	18448.0	24322.0

STREAMFLOW

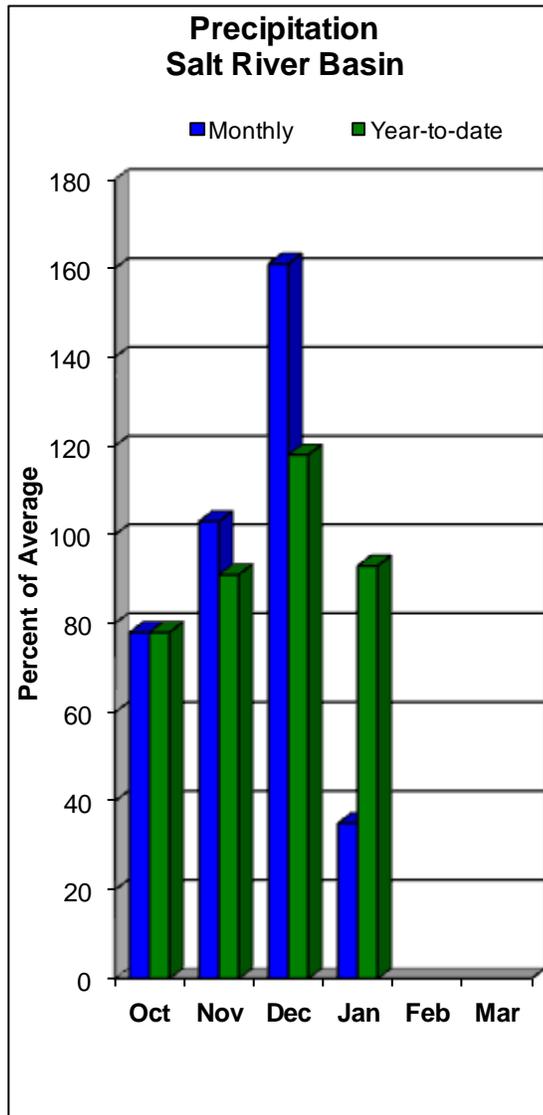
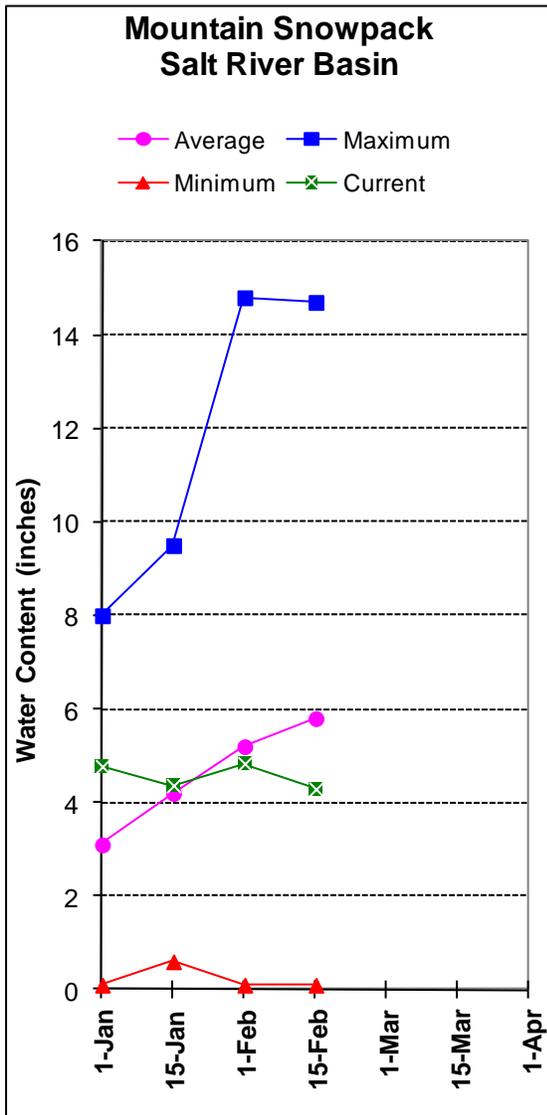
As of February 15, the forecast continues to call for well below normal streamflow for the spring runoff period, ranging from 35 percent of median in the Salt River near Roosevelt and San Carlos Reservoir inflow, to 41 percent of median in the Little Colorado River above Lyman Lake. The mid-month streamflow forecasts take into account the existing dry conditions and predictions for below normal precipitation to continue through the remainder of 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, 2012



SALT RIVER BASIN as of February 15, 2012

Well below normal streamflow levels are forecast for the basin. In the Salt River, near Roosevelt, the forecast calls for 35% of median streamflow through May, while at Tonto Creek, the forecast calls for 38% of median streamflow through May. Snow survey measurements show the Salt snowpack to be at 74% of average.



SALT RIVER BASIN
Streamflow Forecasts - February 15, 2012

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 (3)							
F15-MAY	43	78	110	35	150	225	315
FEBRUARY			17.0	37			46
Tonto Ck ab Gun Ck nr Roosevelt (3)							
F15-MAY	4.0	5.1	11.0	38	20	42	29
FEBRUARY			2.5	20			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) Mid-February

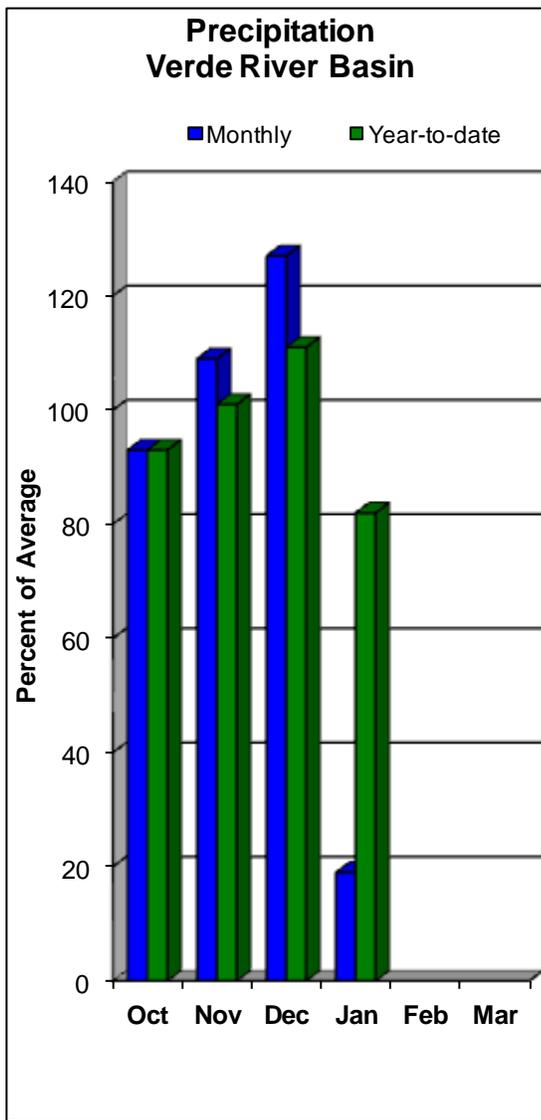
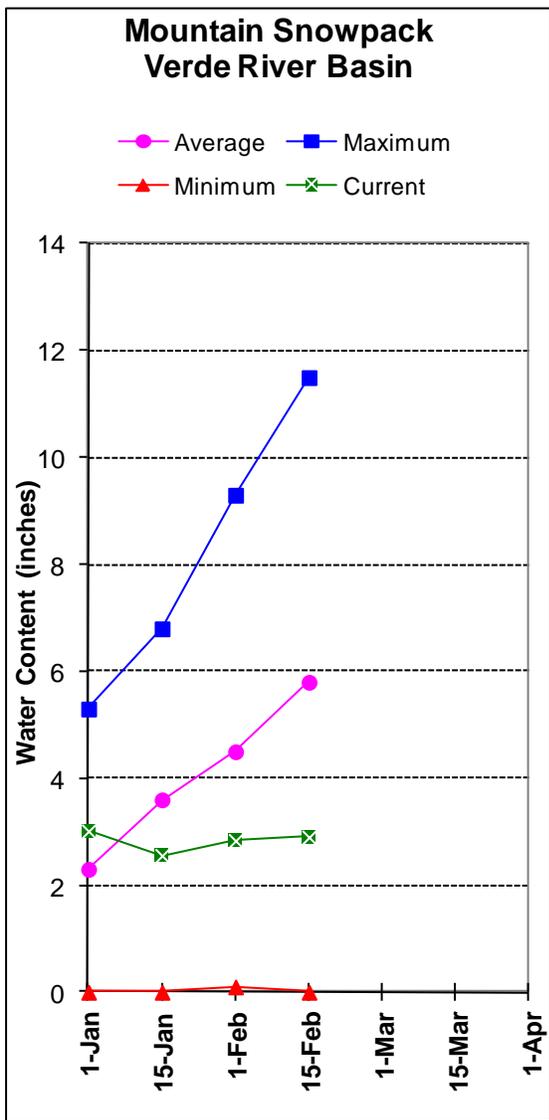
Reservoir	Usable	***** Usable Storage *****		
	Capacity	This Year	Last Year	Average
SALT RIVER RES SYSTEM	2025.8	1459.9	1855.5	1231.5

SALT RIVER BASIN
Watershed Snowpack Analysis - February 15, 2012

Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
SALT RIVER BASIN	10	123	74

VERDE RIVER BASIN as of February 15, 2012

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 50% of average.



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VERDE RIVER BASIN
Streamflow Forecasts - February 15, 2012

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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)	(1000AF)	
Verde R bl Tangle Ck ab Horseshoe Dam (3							
F15-MAY	38	40	65	39	98	164	165
FEBRUARY			13.0	37			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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- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.
- =====

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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	65.4	152.0	163.5

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VERDE RIVER BASIN
Watershed Snowpack Analysis - February 15, 2012

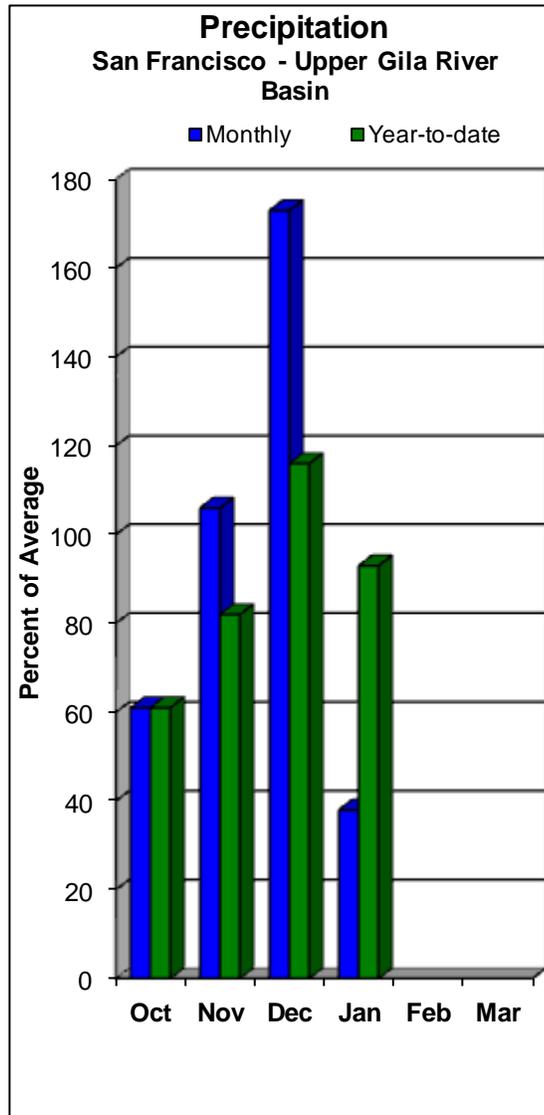
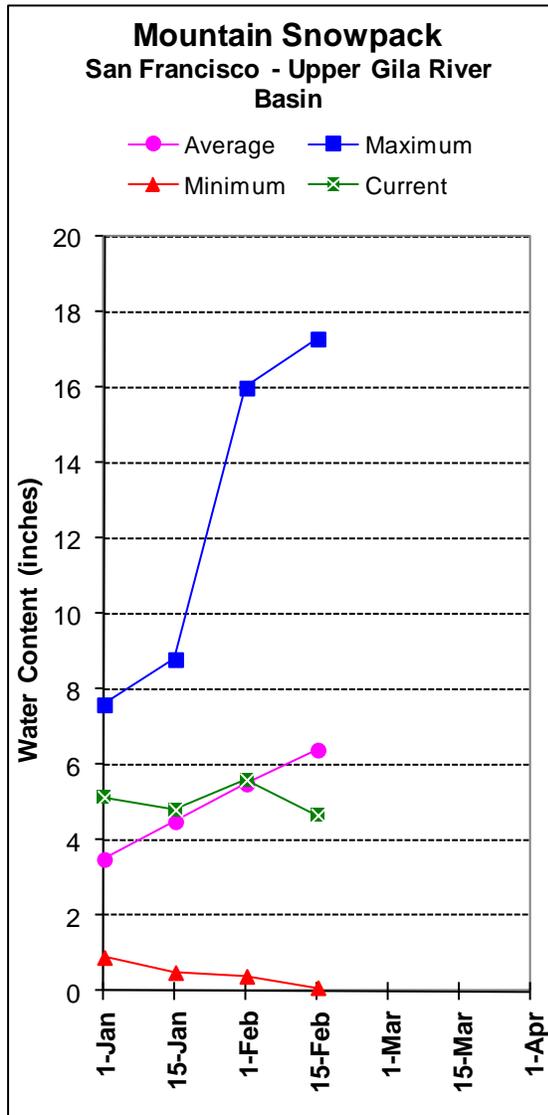
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Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
VERDE RIVER BASIN	11	86	50
SAN FRANCISCO PEAKS	3	62	61

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SAN FRANCISCO-UPPER GILA RIVER BASIN as of February 15, 2012

Well below normal streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 47% of median streamflow levels through May. In the Gila River, near Solomon, the forecast calls for 43% of median streamflow levels through May. At San Carlos Reservoir, inflow to the lake is forecast at 35% of median through May. Snow survey measurements show the snowpack for this basin to be at 74% of average.



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SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - February 15, 2012

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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)		
Gila R at Gila (3)							
F15-MAY	11.8	18.9	25	56	32	45	45
Gila R bl Blue Ck nr Virden (3)							
F15-MAY	10.5	15.0	27	41	47	77	66
San Francisco R at Glenwood (3)							
F15-MAY	3.0	7.0	11.0	50	16.3	27	22
San Francisco R at Clifton (3)							
F15-MAY	10.0	14.0	25	47	46	78	53
Gila R nr Solomon (3)							
F15-MAY	21	30	53	43	104	178	122
FEBRUARY			7.0	29			24
San Carlos Reservoir Inflow (2,3)							
F15-MAY	-48.6	-3.0	28	35	59	105	79

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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.

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

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Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
SAN CARLOS	875.0	24.0	112.4	461.4

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SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - February 15, 2012

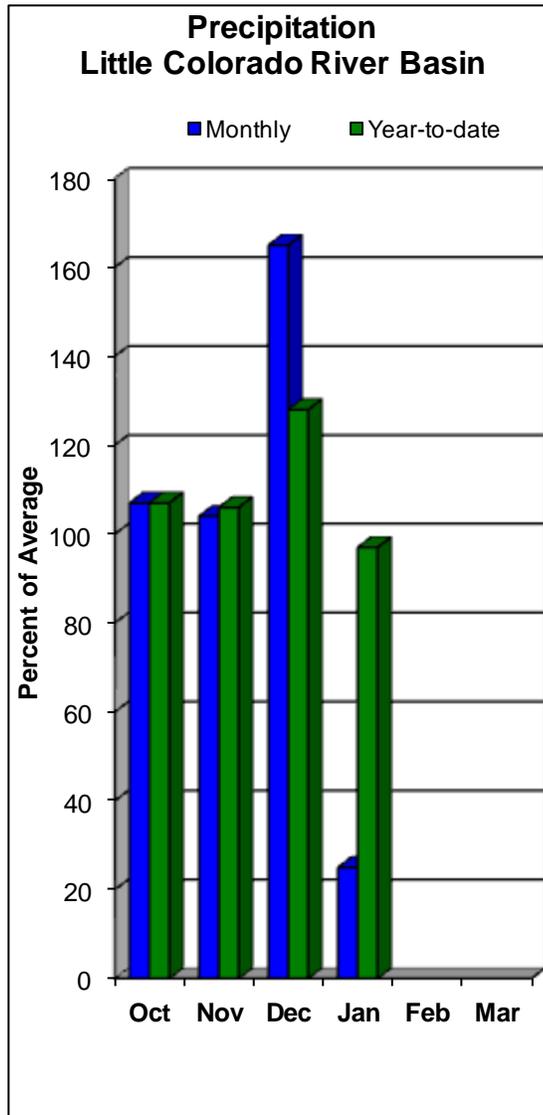
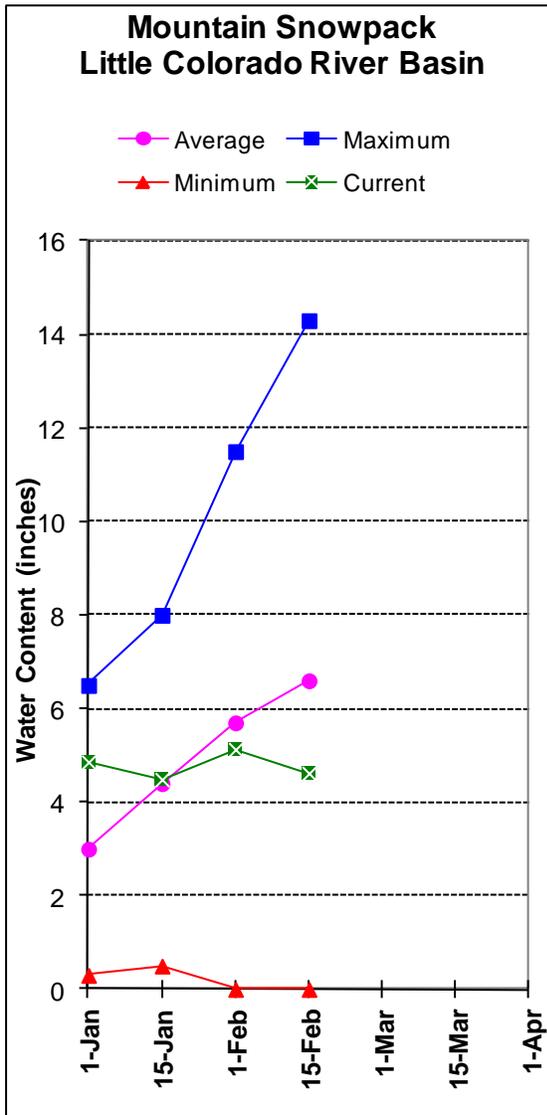
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Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SAN FRANCISCO - UPPER GILA R	9	160	74

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LITTLE COLORADO RIVER BASIN as of February 15, 2012

Well below normal streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 41% of median streamflow through June. At Blue Ridge (C.C. Cragin) Reservoir, inflow to the lake is forecast at 26% of median through May. Snowpacks along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 70% and 62% of average, respectively.



LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - February 15, 2012

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 (3)							
FEB-JUN	0.89	1.83	2.90	41	3.90	6.20	7.10
Blue Ridge Reservoir Inflow (3)							
FEB-MAY	1.2	2.8	4.2	26	5.9	9.0	16.3
Lake Mary Reservoir Inflow (3)							
FEB-MAY	0.26	0.66	1.10	23	1.70	2.90	4.80

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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.

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

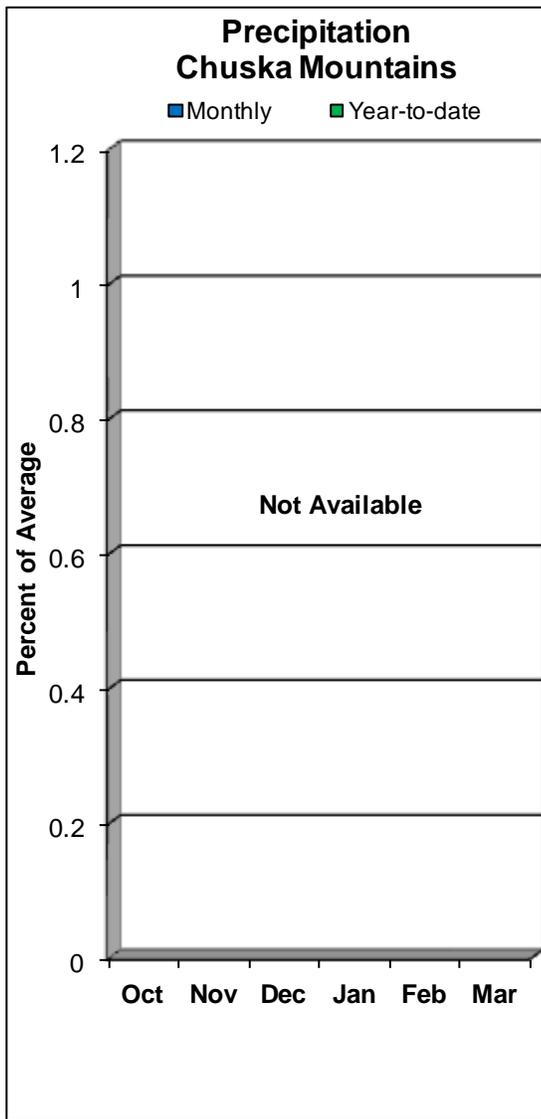
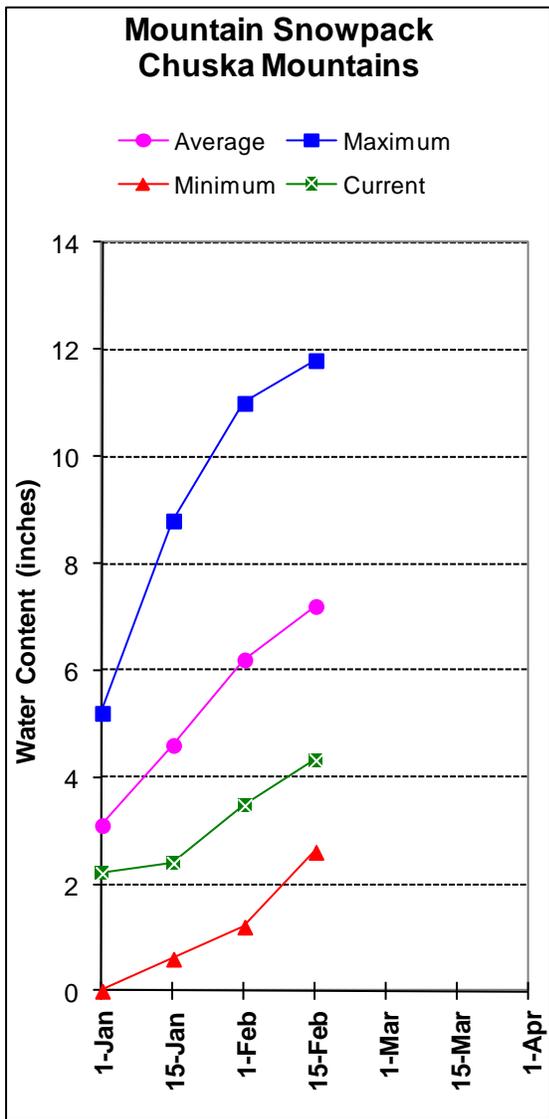
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
LYMAN RESERVOIR	30.0	9.5	18.0	15.4

LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - February 15, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
LITTLE COLORADO - SOUTHERN H	10	126	70
CENTRAL MOGOLLON RIM	4	123	62

CHUSKA MOUNTAINS as of February 15, 2012

Snow survey measurements conducted by staff of the Navajo Water Management Branch show the Chuska snowpack to be at 59% of average. Well below normal runoff is forecast for Captain Tom Wash, Wheatfields Creek, Bowl Canyon Creek, and Kinlichee Creek.



CHUSKA MOUNTAINS
Streamflow Forecasts - February 15, 2012

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	0.05	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	0.12	0.35	0.60	60	0.95	1.68	1.00
Kinlichee Ck							
MAR-MAY	0.08	0.37	0.75	44	1.33	2.60	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.

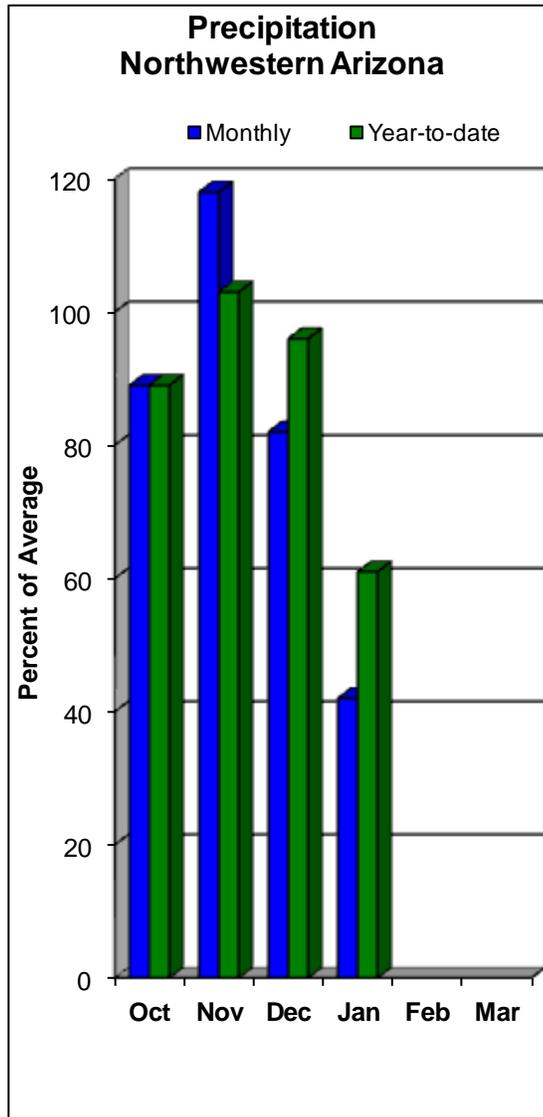
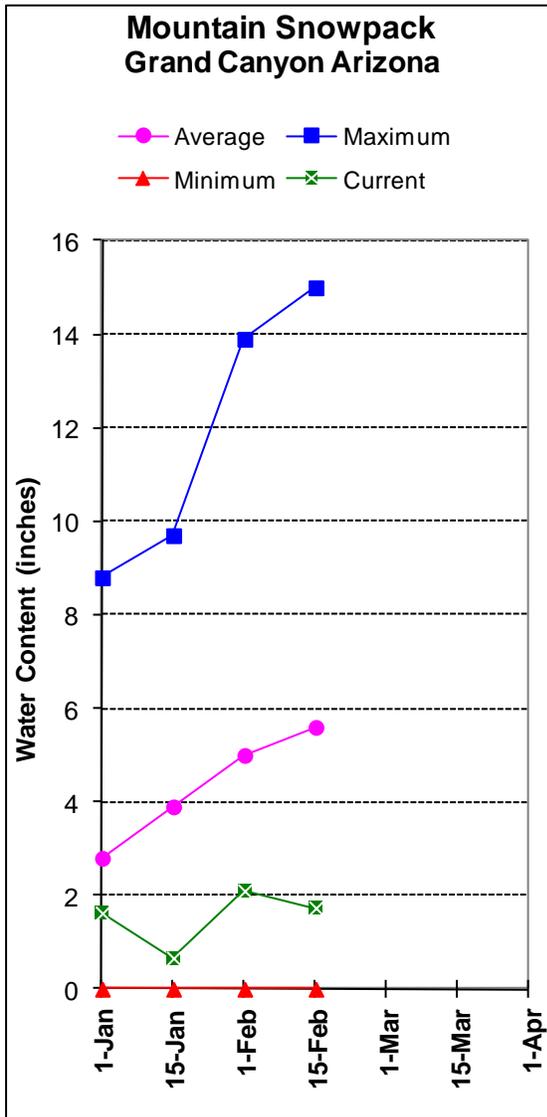
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.
- (3) - Median value used in place of average.

CHUSKA MOUNTAINS
Watershed Snowpack Analysis - February 15, 2012

Watershed	Number of Data Sites	This Year as Percent of Last Year	Percent of Average
CHUSKA MOUNTAINS	7	80	59
DEFIANCE PLATEAU	2	50	23

NORTHWESTERN ARIZONA as of February 15, 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 31% of average.



NORTHWESTERN ARIZONA
Streamflow Forecasts - February 15, 2012

Forecast Pt Forecast Period	<=== Drier === Future Conditions === Wetter ===>						30 Yr Avg (1000AF)
	Chance of Exceeding * =====						
	90%	70%	50%	30%	10%		
	(1000AF)	(1000AF)	(1000AF) (% AVG.)	(1000AF)	(1000AF)	(1000AF)	
Lake Powell Inflow (2)							
APR-JUL	1850	3760	5050	64	6340	8250	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.

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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) Mid-February

Reservoir	Usable	***** Usable Storage *****		
	Capacity	This Year	Last Year	Average
LAKE HAVASU	619.0	589.9	579.2	552.4
LAKE MOHAVE	1810.0	1631.8	1646.0	1675.1
LAKE MEAD	26159.0	14974.0	10963.0	22122.0
LAKE POWELL	24322.0	15546.0	13493.0	18236.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - February 15, 2012

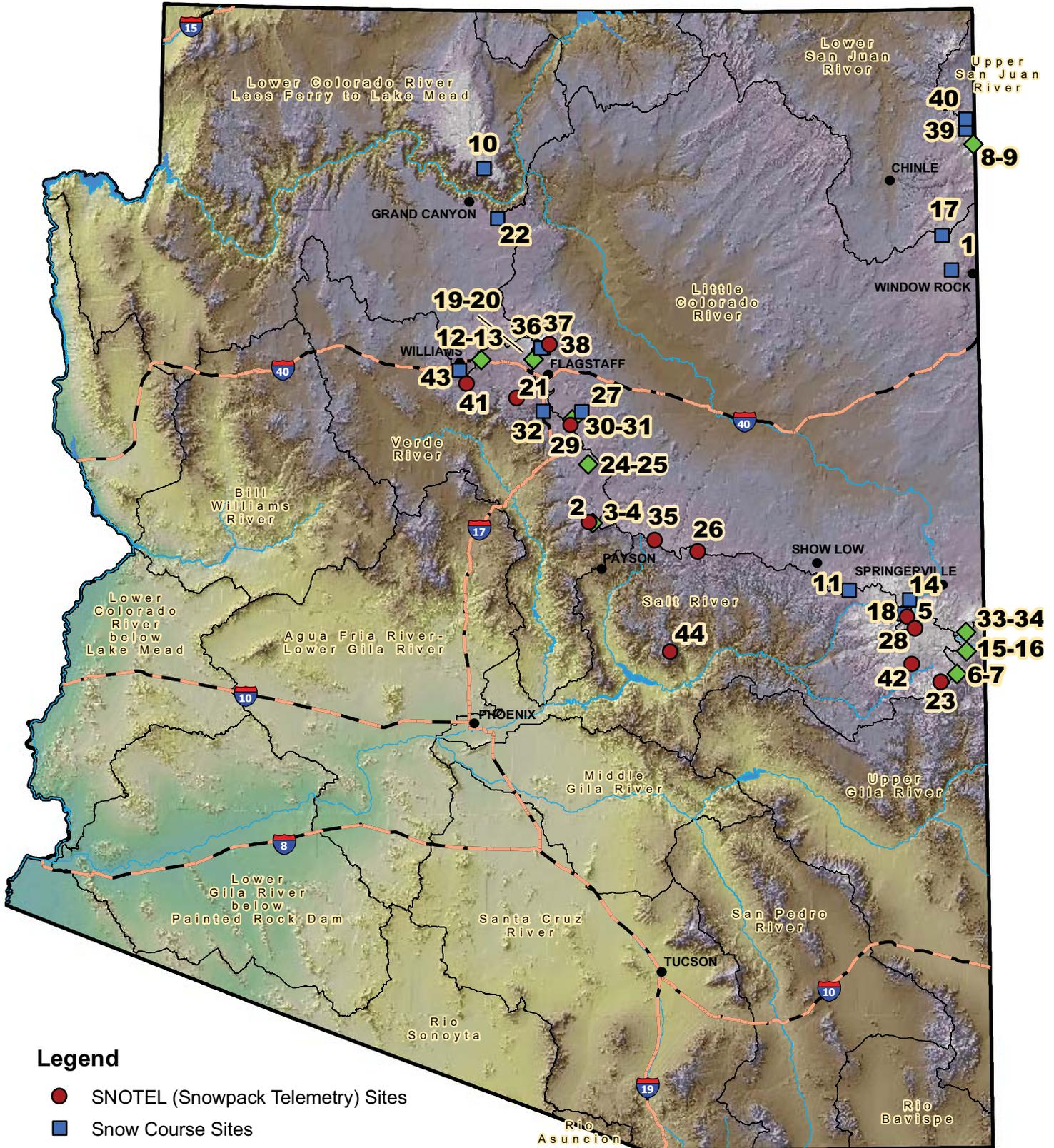
Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
GRAND CANYON	2	64	31

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

FEBRUARY 15, 2012

MAP NUM.	SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
1.	ARBABS FOREST (AK)	7680	2/14	4	.9	1.1	2.7
2.	BAKER BUTTE SNOTEL	7330	2/15	10	2.2	1.4	5.7
3.	BAKER BUTTE #2	7700	2/13	22	7.6	6.3	10.7
4.	BAKER BUTTE SMT SNTL	7700	2/15	29	9.1	7.0	-
5.	BALDY SNOTEL	9220	2/15	22	5.6	4.1	7.0
6.	BEAVER HEAD	8000	2/15	6	1.5	.8	2.9
7.	BEAVER HEAD SNOTEL	7990	2/15	6	1.8	1.8	3.3
8.	BEAVER SPRING	9220	2/10	19	4.8	-	8.7
9.	BEAVER SPRING SNOTEL	9200	2/15	17	6.2	5.6	-
10.	BRIGHT ANGEL	8400	2/14	16	3.0	5.5	8.7
11.	BUCK SPRING	7400	2/15	8	1.4	1.0	4.3
12.	CHALENDER	7100	2/14	1	.2	1.9	3.1
13.	CHALENDER SNOTEL	7100	2/15	3	1.3	3.1	-
14.	CHEESE SPRINGS	8600	2/13	20	4.9	3.1	5.0
15.	CORONADO TRL SNOTEL	8400	2/15	5	.4	2.4	3.4
16.	CORONADO TRAIL	8400	2/15	0	.0	.0	2.9
17.	FLUTED ROCK	7800	2/14	3	.5	1.7	3.4
18.	FORT APACHE	9160	2/13	28	6.1	5.5	6.8
19.	FORT VALLEY	7350	2/14	4	.5	.4	2.7
20.	FORT VALLEY SNOTEL	7350	2/15	-	.4	.1	-
21.	FRY SNOTEL	7220	2/15	23	5.3	5.5	7.0
22.	GRAND CANYON	7500	2/14	3	.5	.0	2.6
23.	HANNAGAN MDWS SNOTEL	9020	2/15	38	9.2	6.5	10.2
24.	HAPPY JACK	7630	2/15	8	1.2	3.4	4.8
25.	HAPPY JACK SNOTEL	7630	2/15	22	5.0	6.7	4.6
26.	HEBER SNOTEL	7640	2/15	9	2.4	2.8	5.5
27.	LAKE MARY	6970	2/13	6	1.8	.9	3.2
28.	MAVERICK FORK SNOTEL	9200	2/15	25	6.9	6.0	8.3
29.	MORMON MTN SNOTEL	7500	2/15	12	2.4	3.1	6.2
30.	MORMON MT. SUMMIT #2	8470	2/13	19	5.2	8.5	12.8
31.	MORMON MTN SUMMIT SN	8500	2/15	28	5.7	5.6	-
32.	NEWMAN PARK	6750	2/14	7	1.1	.4	3.0
33.	NUTRIOSO	8500	2/15	2	.7	.0	1.7
34.	NUTRIOSO SNOTEL	8500	2/15	0	.1	.0	-
35.	PROMONTORY SNOTEL	7900	2/15	27	8.4	6.7	11.5
36.	SNOW BOWL #1 ALT.	10260	2/13	18	4.8	10.6	10.6
37.	SNOW BOWL #2	11000	2/13	27	6.8	11.4	14.6
38.	SNOWSLIDE CYN SNTL	9750	2/15	44	9.7	12.6	10.0
39.	TSAILE CANYON #1	8160	2/10	13	3.1	5.3	6.4
40.	TSAILE CANYON #3	8920	2/10	20	4.5	7.5	8.5
41.	WHITE HORSE SNOTEL	7180	2/15	2	.6	2.3	5.1
42.	WILDCAT SNOTEL	7850	2/15	9	3.9	1.9	4.1
43.	WILLIAMS SKI RUN	7720	2/14	18	4.1	6.4	7.8
44.	WORKMAN CREEK SNOTEL	6900	2/15	18	4.7	4.1	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

