



Natural
Resources
Conservation
Service

Arizona

Basin Outlook Report

January 15, 2009



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 Water Supply Outlook Report as of January 15, 2009

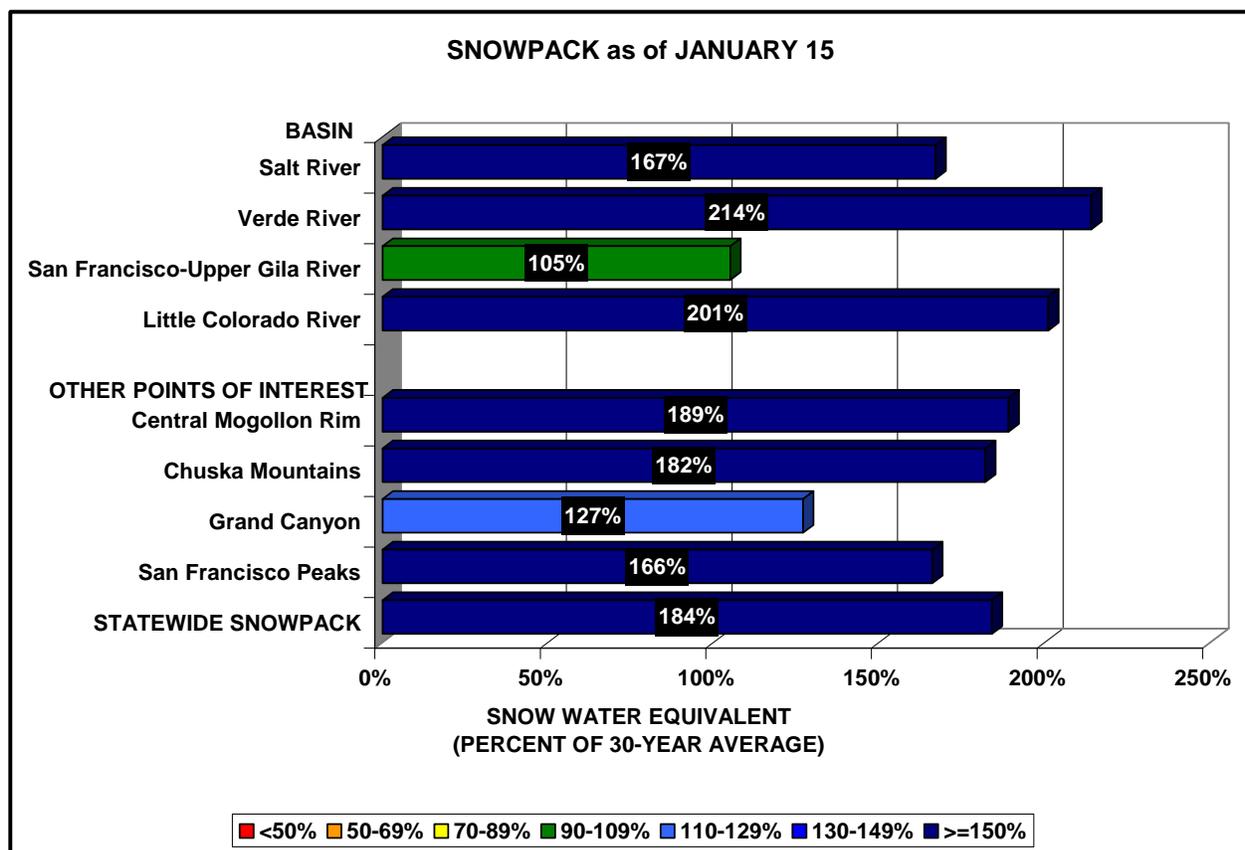
Useful Websites

- ◆ A full range of Snow Survey and Water Supply Forecasting products is available at:
<http://www.az.nrcs.usda.gov/snow>
- ◆ Information on current crop, livestock, range and pasture conditions in Arizona is available at:
http://www.nass.usda.gov/Statistics_by_State/Arizona/Publications
- ◆ Information on current hydrometeorological conditions in Arizona is available at:
<http://www.wrh.noaa.gov/psr/hydrology>

SUMMARY

As of January 15, basin snowpack levels continue to be normal to well above normal, ranging from 105 percent to 214 percent of average. The statewide snowpack remains above normal at 184 percent of average, despite the lack of any appreciable additions during the first two weeks of January. At mid-month, the long-range forecast generally calls for normal to below normal streamflow levels for the spring runoff period. The Salt and Verde River reservoirs stand at 91 percent of capacity.

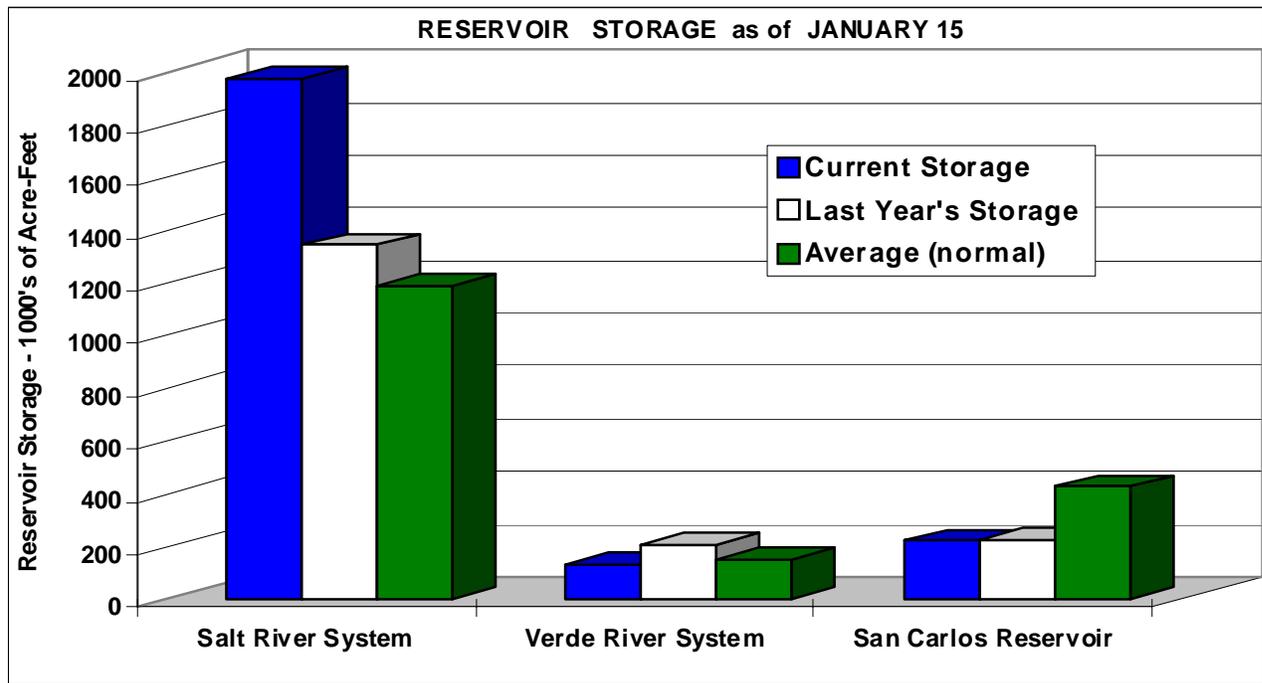
SNOWPACK



PRECIPITATION

Mountain data from NRCS SNOTEL sites show that cumulative precipitation since October 1 remains at or above average 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



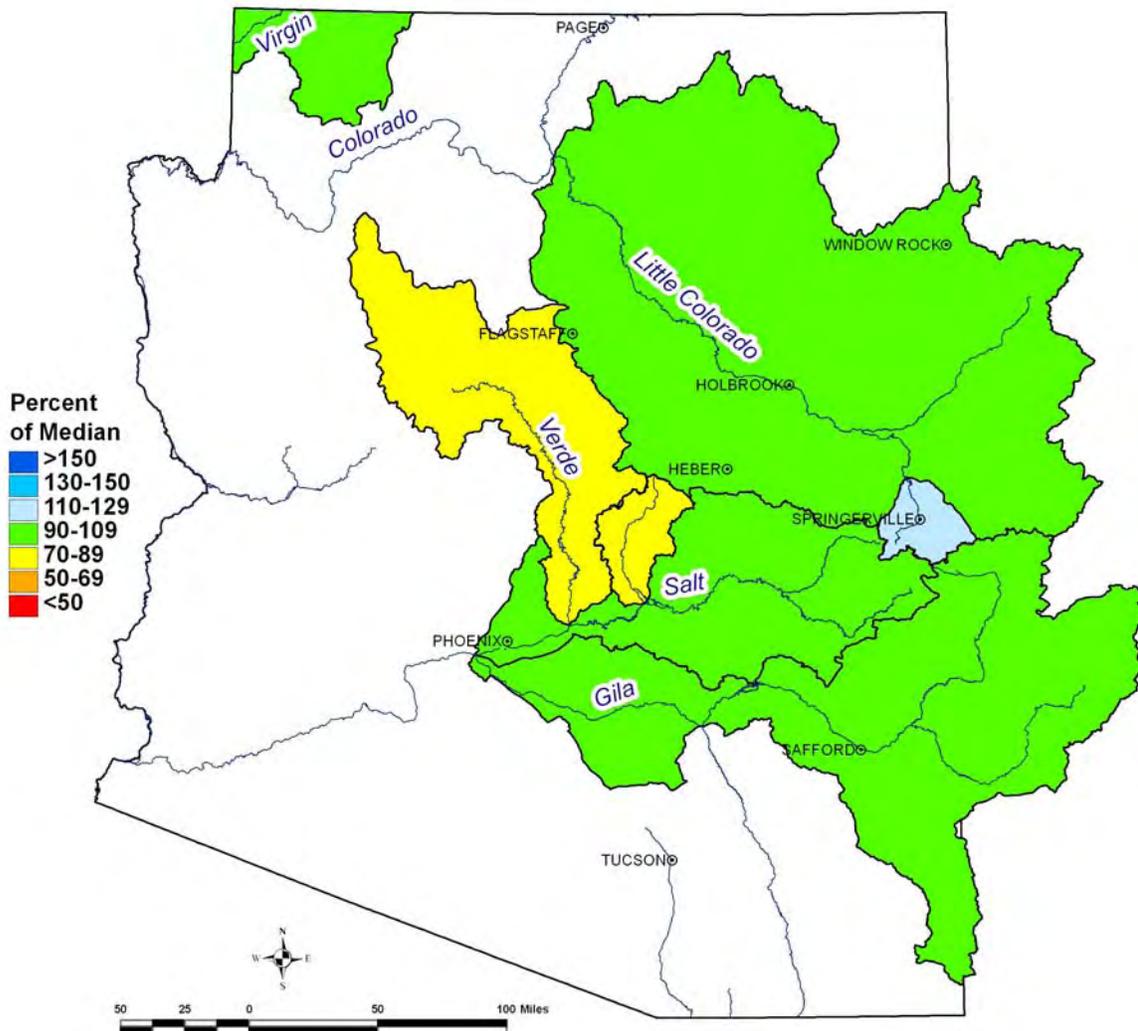
Key storage volumes displayed in thousands of acre-feet (x1000):

<u>Reservoir</u>	<u>Current Storage</u>	<u>Last Year Storage</u>	<u>30-Year Average</u>
Salt River System	1972.6	1339.4	1181.2
Verde River System	125.1	205.0	143.5
San Carlos Reservoir	216.7	218.0	421.8
Lyman Lake	14.2	7.4	14.3
Lake Pleasant	568.6	657.2	----
Lake Havasu	552.8	566.0	557.4
Lake Mohave	1612.7	1607.4	1657.0
Lake Mead	12585.0	12959.0	21868.0
Lake Powell	13350.0	11073.0	18748.0

STREAMFLOW

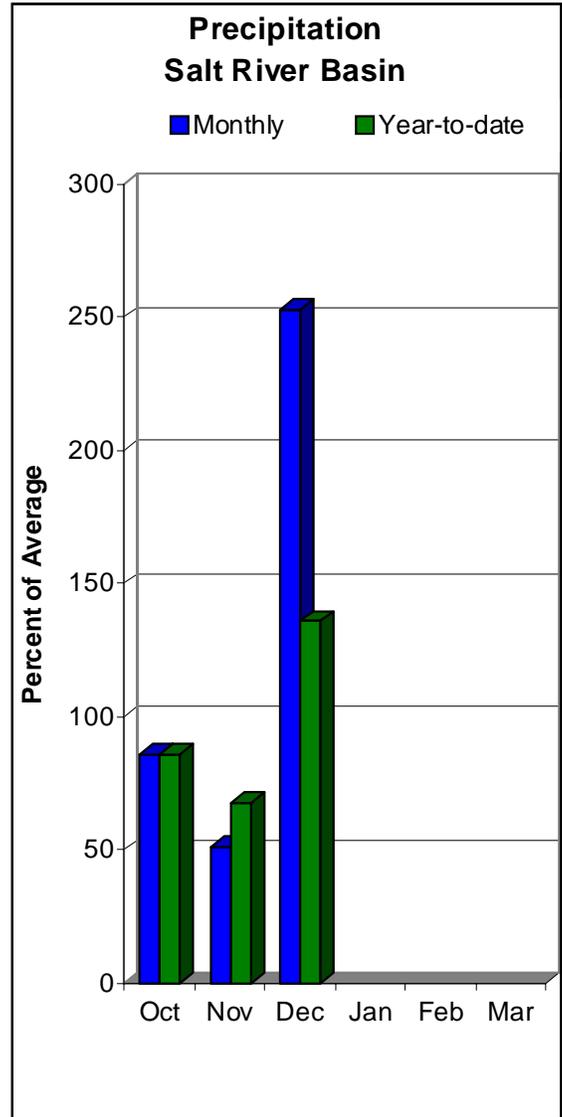
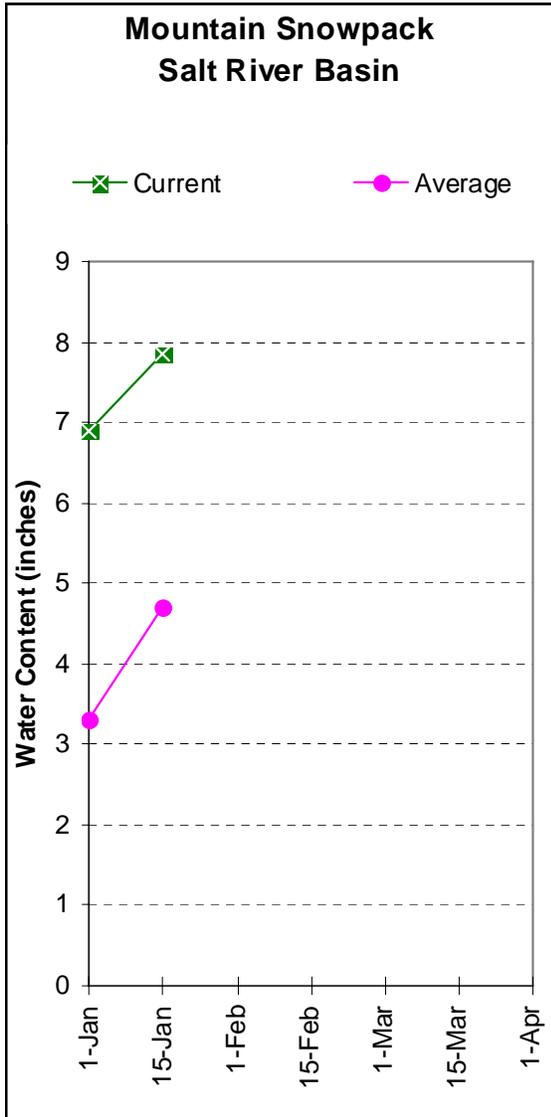
As of January 15, the long-range forecast generally calls for normal to below normal streamflow levels for the spring runoff period. This is primarily due to a poor outlook for precipitation during the coming months. The exceptions include the Little Colorado River above Lyman Lake and the Chuska Mountains on the Navajo Nation, where the long-range forecast calls for above normal streamflow levels. Please refer to the basin forecast tables found in this report for more information regarding water supply forecasts.

Arizona Spring Streamflow Forecasts as of January 15, 2009



SALT RIVER BASIN as of January 15, 2009

Median to below median streamflow levels are forecast for the basin, mostly due to a poor outlook for precipitation. In the Salt River, near Roosevelt, the forecast calls for 95% of median streamflow through May, while at Tonto Creek, the forecast calls for 82% of median streamflow through May. Snow survey measurements show the Salt snowpack to be at 167% of average.



SALT RIVER BASIN
Streamflow Forecasts - January 15, 2009

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 River nr Roosevelt							
J15-MAY	132	245	350	95	480	730	370
JANUARY			37	151			25
Tonto Creek ab Gun Creek nr Roosevelt							
J15-MAY	5.6	23	45	82	78	152	55
JANUARY			7.00	119			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.

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

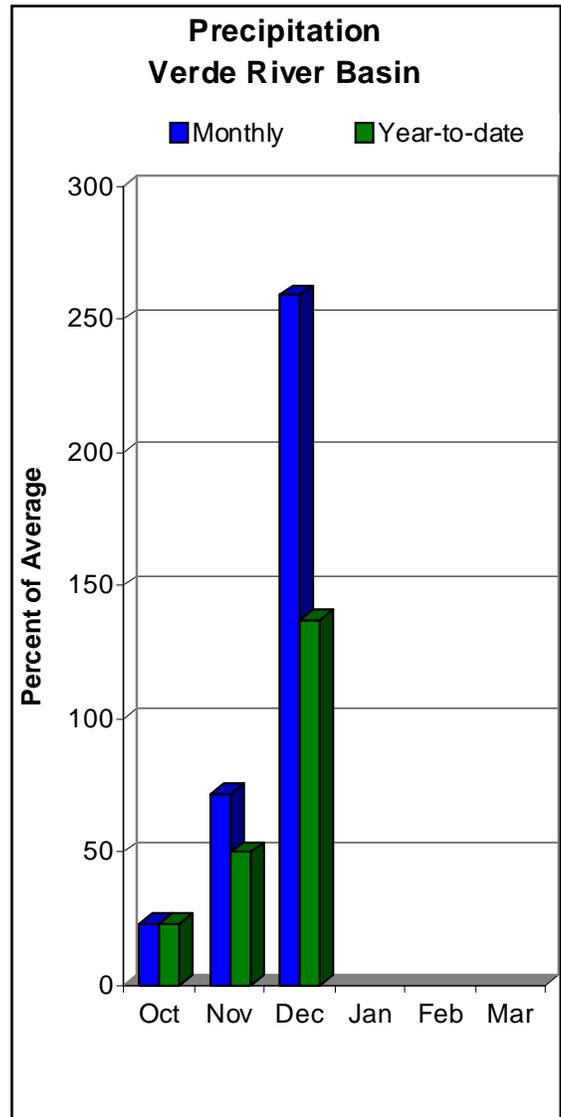
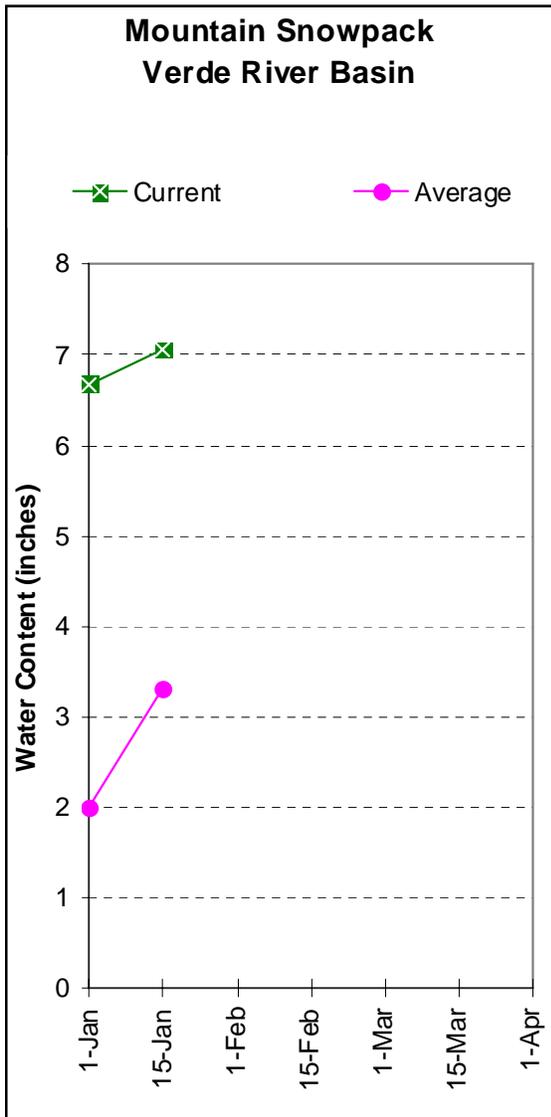
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
SALT RIVER RES SYSTEM	2025.8	1972.6	1339.4	1181.2

SALT RIVER BASIN
Watershed Snowpack Analysis - January 15, 2009

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SALT RIVER BASIN	8	130	167

VERDE RIVER BASIN as of January 15, 2009

Below median streamflow levels are forecast for the basin, mostly due to a poor outlook for precipitation. In the Verde River, at Horseshoe Dam, the forecast calls for 86% of median streamflow through May. Snow survey measurements show the Verde snowpack to be at 214% of average.



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VERDE RIVER BASIN
Streamflow Forecasts - January 15, 2009

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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 River abv Horseshoe Dam							
J15-MAY	72	117	180	86	265	425	210
JANUARY			25	104			24

* 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-January

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Reservoir	Usable	***** Usable Storage *****		*****
	Capacity	This Year	Last Year	Average
VERDE RIVER RES SYSTEM	287.4	125.1	205.0	143.5

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VERDE RIVER BASIN
Watershed Snowpack Analysis - January 15, 2009

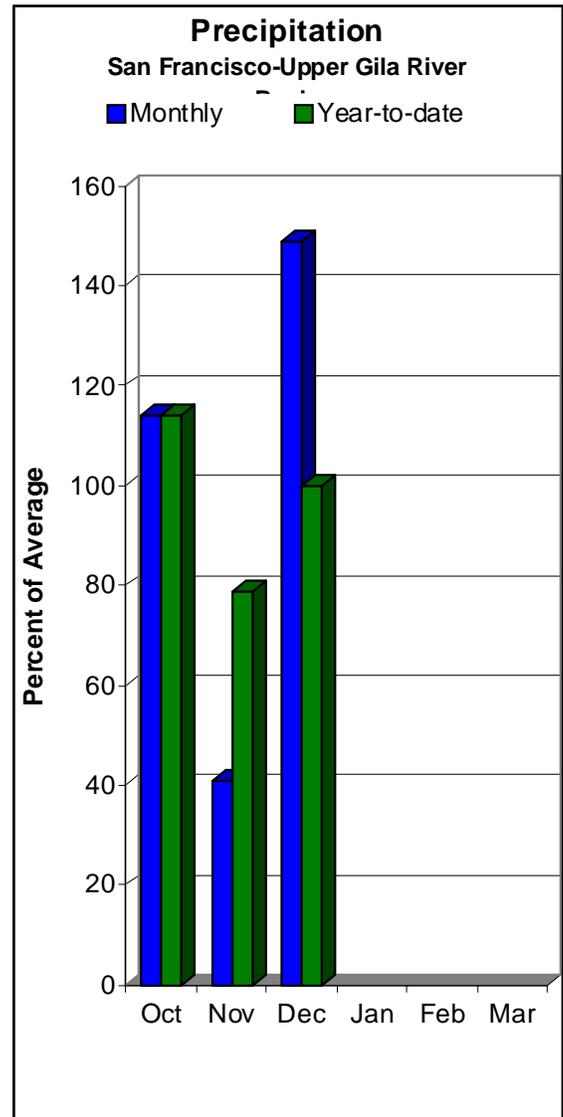
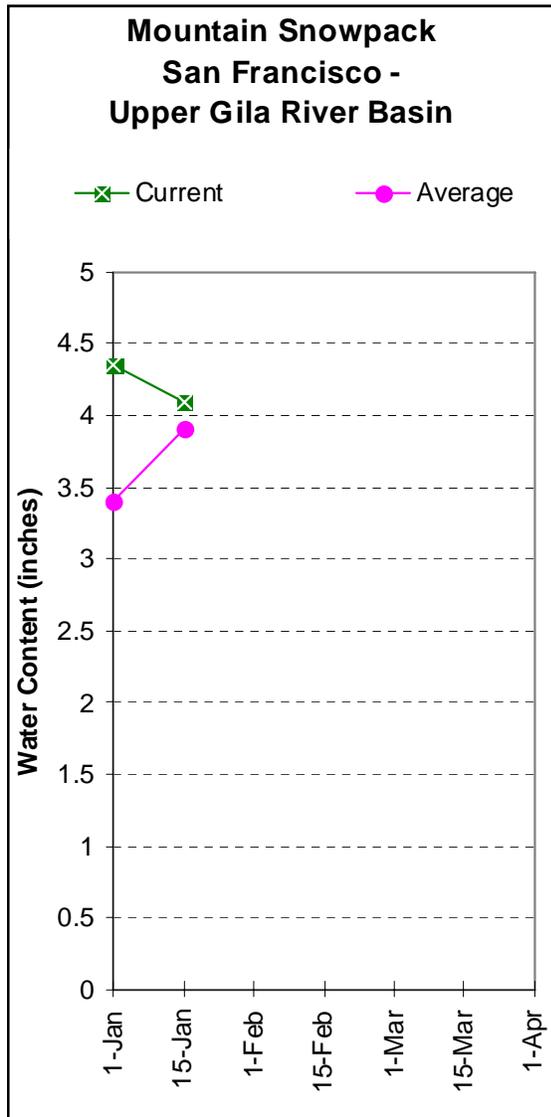
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Watershed	Number of	This Year as Percent of	
	Data Sites	Last Year	Average
VERDE RIVER BASIN	10	149	214
SAN FRANCISCO PEAKS	3	101	166

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SAN FRANCISCO-UPPER GILA RIVER BASIN as of January 15, 2009

Median to below median streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 91% of median streamflow levels through May, while in the Gila River, near Solomon, the forecast calls for 79% of median streamflow levels through May. At San Carlos Reservoir, inflow to the lake is forecast at 100% of median through May. Snow survey measurements show the snowpack for this basin to be at 107% of average.



SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - January 15, 2009

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 River at Gila							
J15-MAY	27	40	51	93	64	85	55
Gila River nr Virden							
J15-MAY	26	42	65	81	88	123	80
San Francisco River at Glenwood							
J15-MAY	10.4	17.1	23	89	30	43	26
San Francisco River at Clifton							
J15-MAY	24	36	60	91	84	121	66
Gila River nr Solomon							
J15-MAY	50	65	125	79	185	275	158
San Carlos Reservoir Inflow							
J15-MAY	36	45	90	100	135	200	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.

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

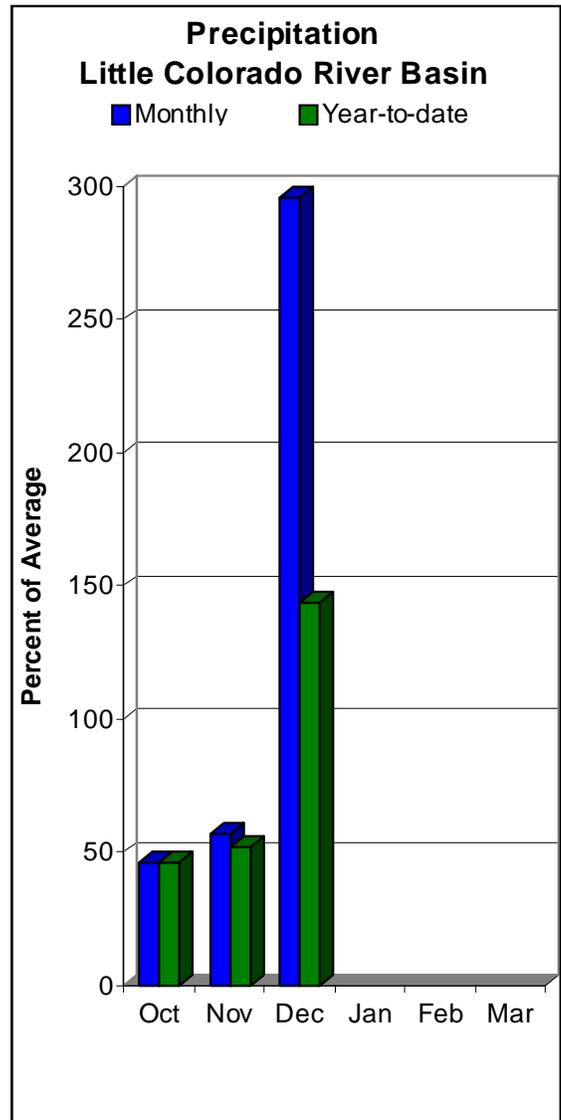
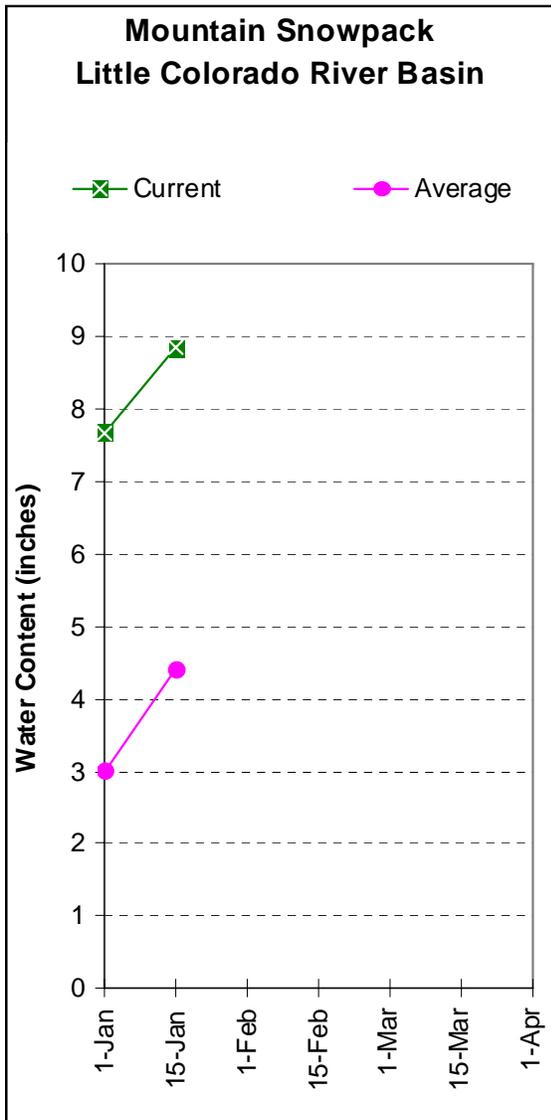
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
SAN CARLOS	875.0	216.7	218.0	421.8
PAINTED ROCK DAM		NO REPORT		

SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - January 15, 2009

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SAN FRANCISCO - UPPER GILA R	9	82	107

LITTLE COLORADO RIVER BASIN as of January 15, 2009

Median to above median streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 122% of median streamflow through June, while at Woodruff, the forecast calls for 97% of median streamflow through May. Snowpacks along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 201% and 189% of average, respectively.



LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - January 15, 2009

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 River abv Lyman Lake							
JAN-JUN	2.90	6.00	9.00	122	12.90	21.00	7.40
Little Colorado River at Woodruff							
JAN-MAY	1.40		3.50	97		9.00	3.60
Blue Ridge Reservoir Inflow							
JAN-MAY	6.8	12.8	18.0	105	24	34	17.1
Lake Mary Inflow							
JAN-MAY	1.89	3.50	5.00	100	6.90	10.40	5.00

* 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-January

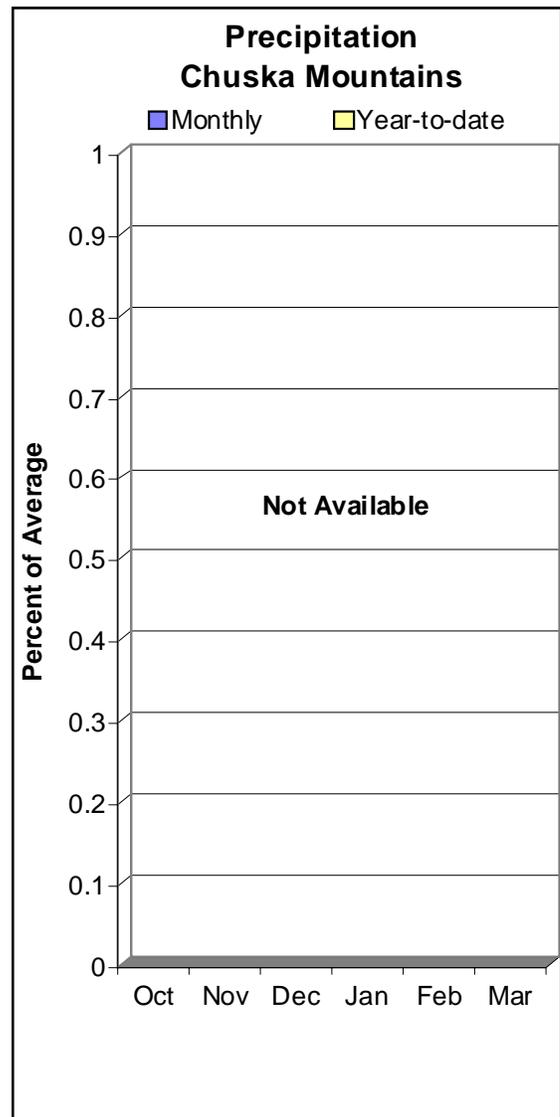
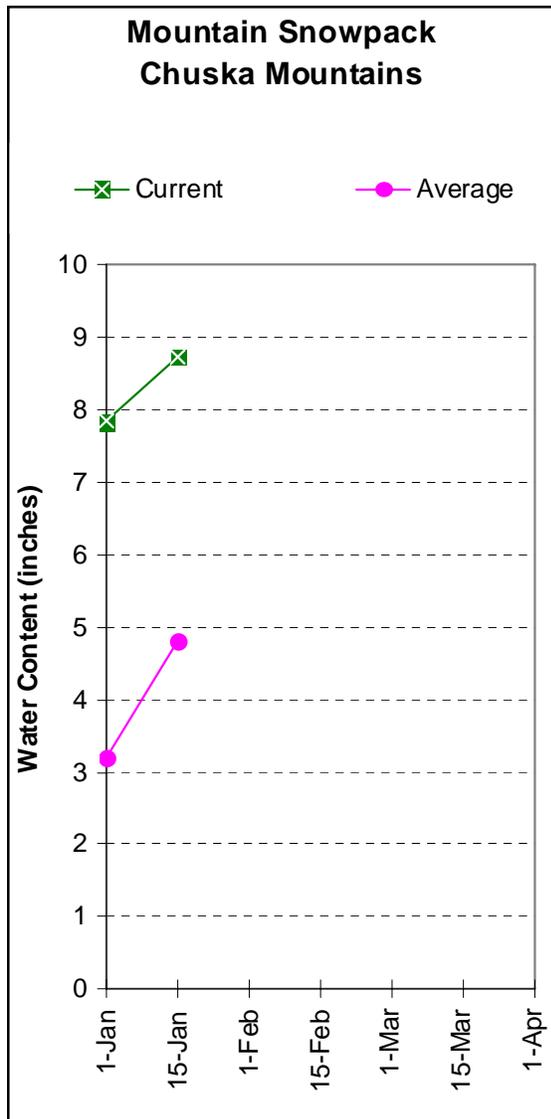
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
LYMAN RESERVOIR	30.0	14.2	8.4	14.3
SHOW LOW LAKE		NO REPORT		

LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - January 15, 2009

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
LITTLE COLORADO - SOUTHERN H	9	189	201
CENTRAL MOGOLLON RIM	4	194	189

CHUSKA MOUNTAINS as of January 15, 2009

Snow survey measurements conducted by staff of the Navajo Water Management Branch show the Chuska snowpack to be at 182% of average. Above average runoff is forecast for Captain Tom Wash, Wheatfields Creek, Bowl Canyon Creek, and Kinlichee Creek.



CHUSKA MOUNTAINS
Streamflow Forecasts - January 15, 2009

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	0.58	2.10	4.00	141	6.80	12.80	2.83
Wheatfields Creek nr Wheatfields							
MAR-MAY	1.49	2.60	3.50	121	4.70	6.80	2.90
Bowl Canyon Creek abv Asaayi Lake							
MAR-MAY	0.54	0.91	1.25	125	1.66	2.40	1.00
Kinlichee Creek							
MAR-MAY	0.47	1.21	2.00	118	3.10	5.30	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.

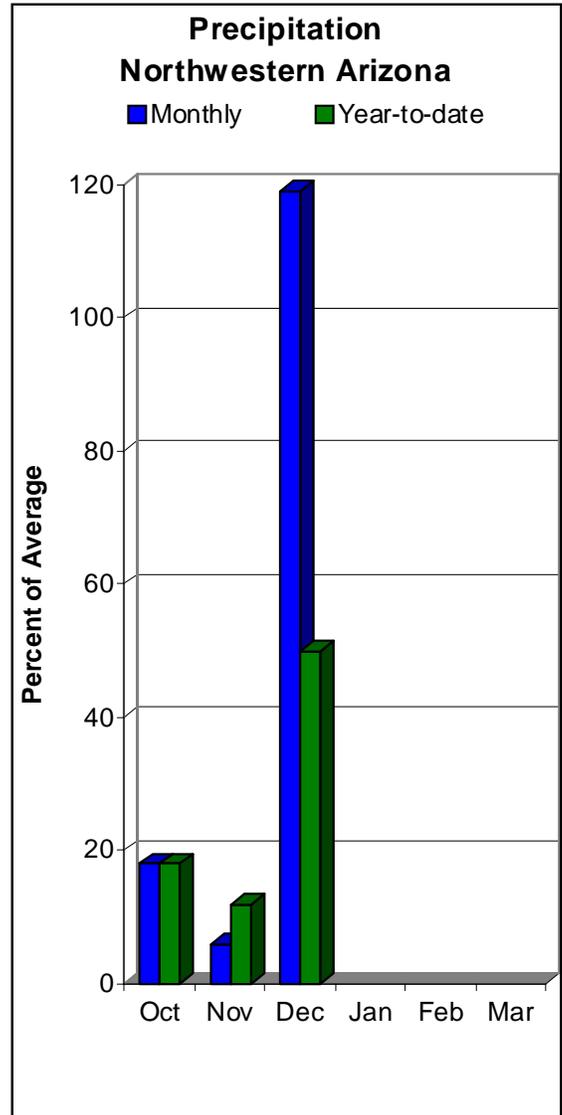
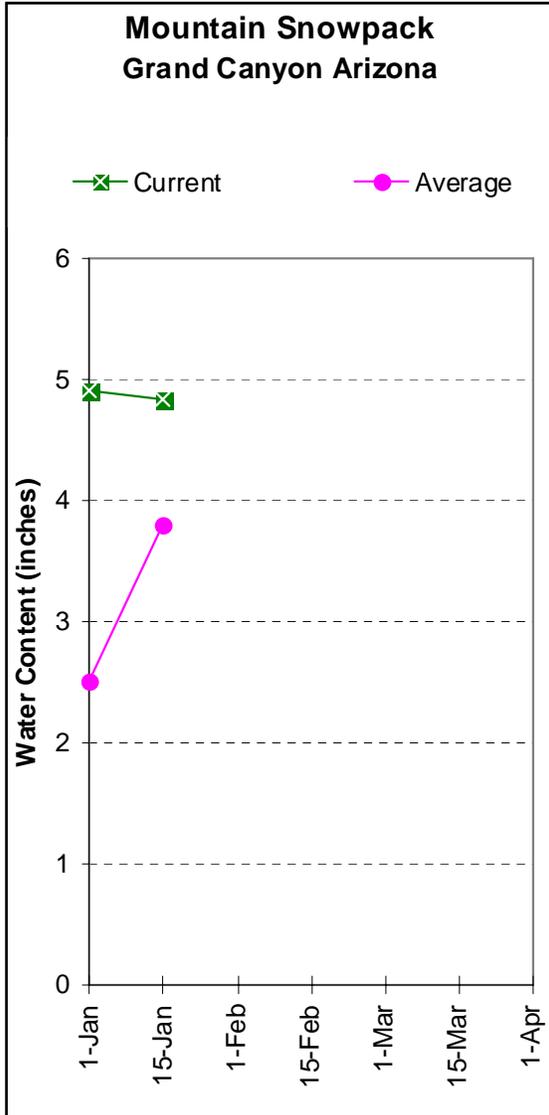
The average is computed for the 1971-2000 base period.

CHUSKA MOUNTAINS
Watershed Snowpack Analysis - January 15, 2009

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CHUSKA MOUNTAINS	7	163	182
DEFIANCE PLATEAU	2	160	224

NORTHWESTERN ARIZONA as of January 15, 2009

On the Colorado River, inflow to Lake Powell is forecast at 101% 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 127% of average.



NORTHWESTERN ARIZONA
Streamflow Forecasts - January 15, 2009

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	4590	6620	8000	101	9380	11400	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.

- (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.

NORTHWESTERN ARIZONA
Reservoir Storage (1000AF) Mid-January

Reservoir	Usable Capacity	***** Usable Storage *****		
		This Year	Last Year	Average
LAKE HAVASU	619.0	552.8	566.0	557.4
LAKE MOHAVE	1810.0	1612.7	1607.4	1657.0
LAKE MEAD	26159.0	12585.0	12959.0	21868.0
LAKE POWELL	24322.0	13350.0	11073.0	18748.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - January 15, 2009

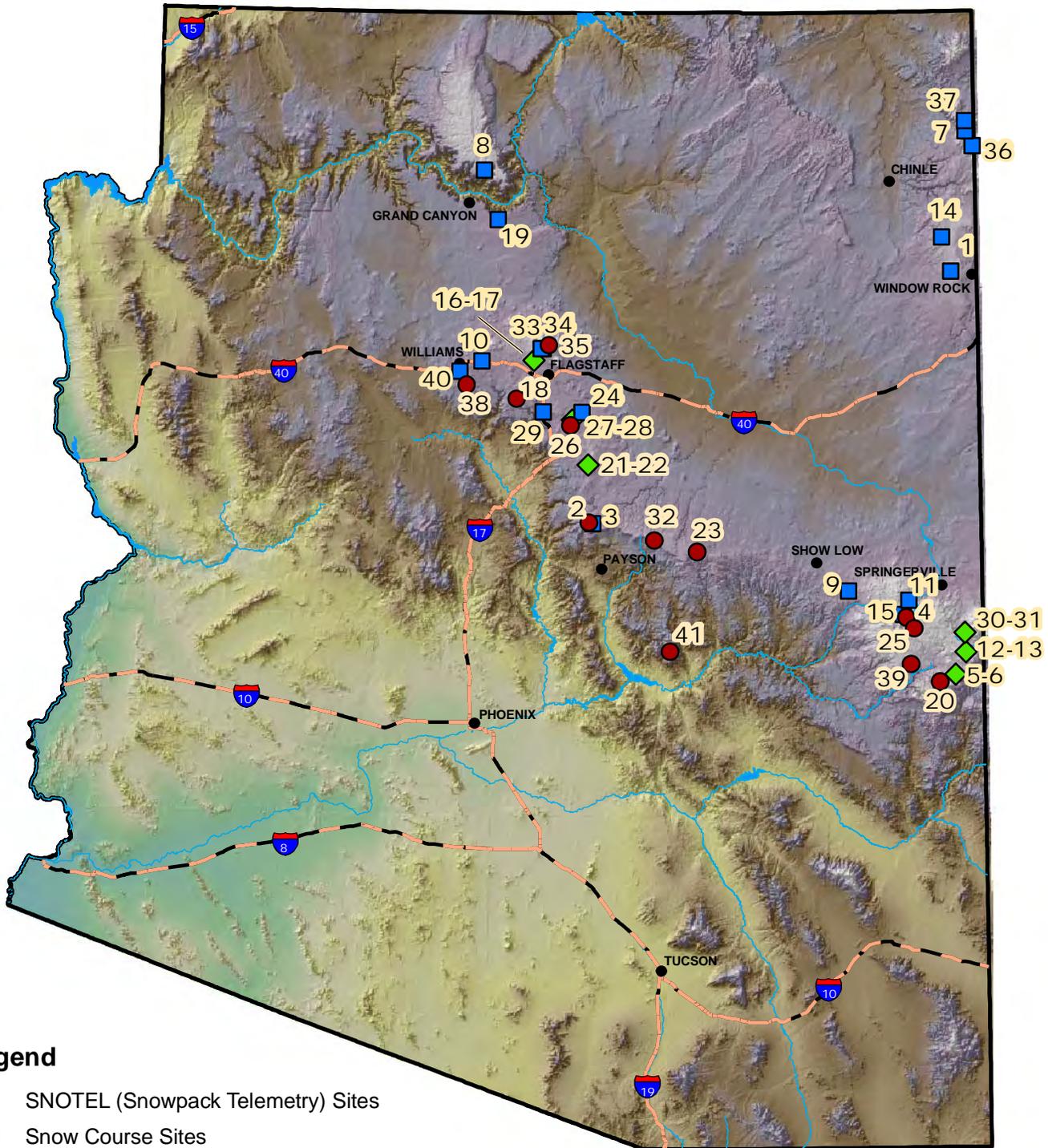
Watershed	Number of Data Sites	This Year as Percent of	
		Last Year	Average
GRAND CANYON	2	116	127

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

JANUARY 15, 2009

MAP NUM.	SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
1.	ARBABS FOREST (AK)	7680	1/12/09	14	3.8	2.3	1.7
2.	BAKER BUTTE #2	7700	1/13/09	30	9.9	5.6	6.5
3.	BAKER BUTTE SNOTEL	7330	1/15/09	22	7.1	3.6	3.5
4.	BALDY SNOTEL	9220	1/15/09	30	8.2	6.4	4.5
5.	BEAVER HEAD	8000	1/15/09	11	2.3	3.8	2.1
6.	BEAVER HEAD SNOTEL	7990	1/15/09	15	3.5	4.5	2.5
7.	BEAVER SPRING	9220	1/13/09	29	9.1	5.6	5.9
8.	BRIGHT ANGEL	8400	1/14/09	22	6.8	7.0	5.7
9.	BUCK SPRING	7400	1/14/09	24	7.2	2.6	4.1
10.	CHALENDER	7100	1/14/09	16	6.0	1.9	2.1
11.	CHEESE SPRINGS	8600	1/13/09	20	9.4	3.3	3.3
12.	CORONADO TRAIL	8350	1/15/09	10	2.4	5.5	2.1
13.	CORONADO TRL SNOTEL	8400	1/15/09	12	3.7	5.0	2.8
14.	FLUTED ROCK	7800	1/12/09	16	4.7	3.0	2.1
15.	FORT APACHE	9160	1/13/09	32	9.0	6.3	4.8
16.	FORT VALLEY	7350	1/14/09	15	4.3	3.8	1.9
17.	FORT VALLEY SNOTEL	7350	1/15/09	12	4.3	---	---
18.	FRY SNOTEL	7220	1/15/09	28	8.6	5.9	4.0
19.	GRAND CANYON	7500	1/14/09	12	3.1	1.5	2.1
20.	HANNAGAN MDWS SNOTEL	9020	1/15/09	31	6.0	9.6	7.0
21.	HAPPY JACK	7630	1/15/09	19	5.3	4.1	3.0
22.	HAPPY JACK SNOTEL	7630	1/15/09	21	6.6	4.8	2.9
23.	HEBER SNOTEL	7640	1/15/09	26	9.0	3.9	3.9
24.	LAKE MARY	6970	1/13/09	21	6.3	3.2	2.0
25.	MAVERICK FORK SNOTEL	9200	1/15/09	39	11.2	8.7	5.7
26.	MORMON MTN SNOTEL	7500	1/15/09	22	7.9	5.8	3.8
27.	MORMON MTN SUMMIT #2	8470	1/13/09	36	12.0	11.6	7.3
28.	MORMON MTN SUMMIT SNTL	8500	1/15/09	34	10.7	---	---
29.	NEWMAN PARK	6750	1/14/09	19	6.3	4.0	2.1
30.	NUTRIOSO	8500	1/15/09	8	2.1	---	1.4
31.	NUTRIOSO SNOTEL	8500	1/15/09	0	.3	---	---
32.	PROMONTORY SNOTEL	7900	1/15/09	40	13.6	7.3	7.1
33.	SNOW BOWL #1 ALT.	10260	1/12/09	40	12.0	10.2	7.4
34.	SNOW BOWL #2	11000	1/13/09	46	15.2	16.2	10.4
35.	SNOWSLIDE CYN SNTL	9750	1/15/09	49	15.7	16.0	8.0
36.	TSAILE CANYON #1	8160	1/13/09	26	7.1	4.9	4.2
37.	TSAILE CANYON #3	8920	1/13/09	31	8.9	6.4	5.6
38.	WHITE HORSE SNOTEL	7180	1/15/09	20	6.7	4.0	3.2
39.	WILDCAT SNOTEL	7850	1/15/09	14	4.5	4.0	2.8
40.	WILLIAMS SKI RUN	7720	1/14/09	35	10.7	5.8	4.8
41.	WORKMAN CREEK SNOTEL	6900	1/15/09	31	11.7	3.1	4.3

Arizona Snow Survey Data Sites



Legend

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

