



Natural
Resources
Conservation
Service

Arizona

Basin Outlook Report

January 15, 2005



Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States 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 SNOTEL sites, along with precipitation and streamflow values are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge 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 others can be interpreted similarly.

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 if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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ARIZONA

Water Supply Outlook Report as of January 15, 2005

A full range of Snow Survey and Water Supply Forecasting products is available on the Arizona NRCS Home Page:

Snow Survey Program

<http://www.az.nrcs.usda.gov/snow/index.html>

Helpful Internet Sites

Defending Against Drought – NRCS

<http://www.nrcs.usda.gov/feature/highlights/drought.html>

- Ideas on water, land, and crop management for you to consider while creating your drought plan.

Arizona Agri-Weekly

<http://www.nass.usda.gov/az/cur-agwk.pdf>

- Provides an overview of Arizona's crop, livestock, range and pasture conditions as reported by local staffs of the USDA's Agricultural Statistic Service and University of Arizona, College of Agriculture.

SUMMARY

River basin snowpack levels monitored in this report are well above average for this time of year. Additionally, precipitation catch recorded at NRCS SNOTEL sites continue well above their seasonal averages. As a result of these favorable conditions, water users can expect above median streamflow levels this season. More snowfall is needed, however, to significantly improve reservoir storage on the Salt and Gila Rivers.

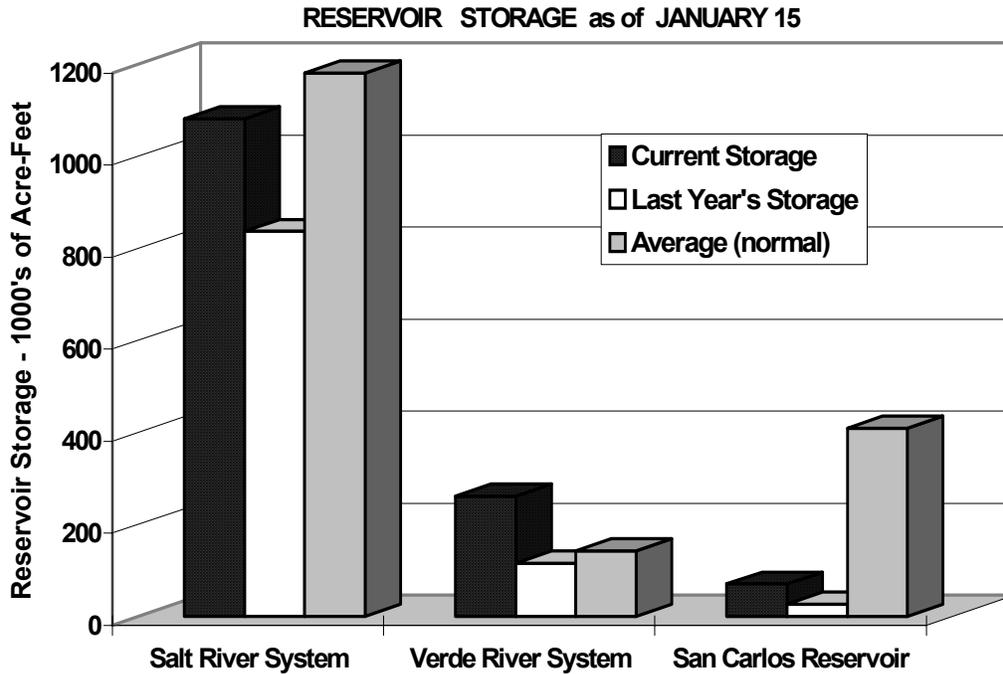
SNOWPACK

Watershed	Percent (%) of 30-Yr. Average Snowpack Levels as of January 15, 2005
Salt River Basin	125%
Verde River Basin	204%
Little Colorado River Basin	141%
San Francisco-Upper Gila River Basin	122%
Other Points of Interest	
Chuska Mountains	114%
Central Mogollon Rim	171%
Grand Canyon	113%
San Francisco Peaks	241%
Statewide Snowpack	154%

PRECIPITATION

Above average precipitation catch was recorded at all NRCS SNOTEL sites for the period January 1-15. In that regard, precipitation totals for the month of January will be illustrated in the next report.

RESERVOIR



Key storage volumes displayed in thousands of acre-feet (1000 x):

RESERVOIR	CURRENT STORAGE	LAST YEAR STORAGE	30-YEAR AVERAGE
Salt River System	1081.2	836.4	1181.3
Verde River System	261.2	114.8	141.7
San Carlos Reservoir	70.2	26.8	409.3
Lyman Lake	3.5	2.1	14.3
Show Low Lake	3.6	3.1	2.6
Lake Pleasant	587.9	487.6	----
Lake Havasu	584.8	510.5	557.4
Lake Mohave	1723.2	1606.3	1657.0
Lake Mead	14759.0	15385.0	21868.0
Lake Powell	8604.0	11236.0	18748.0

STREAMFLOW

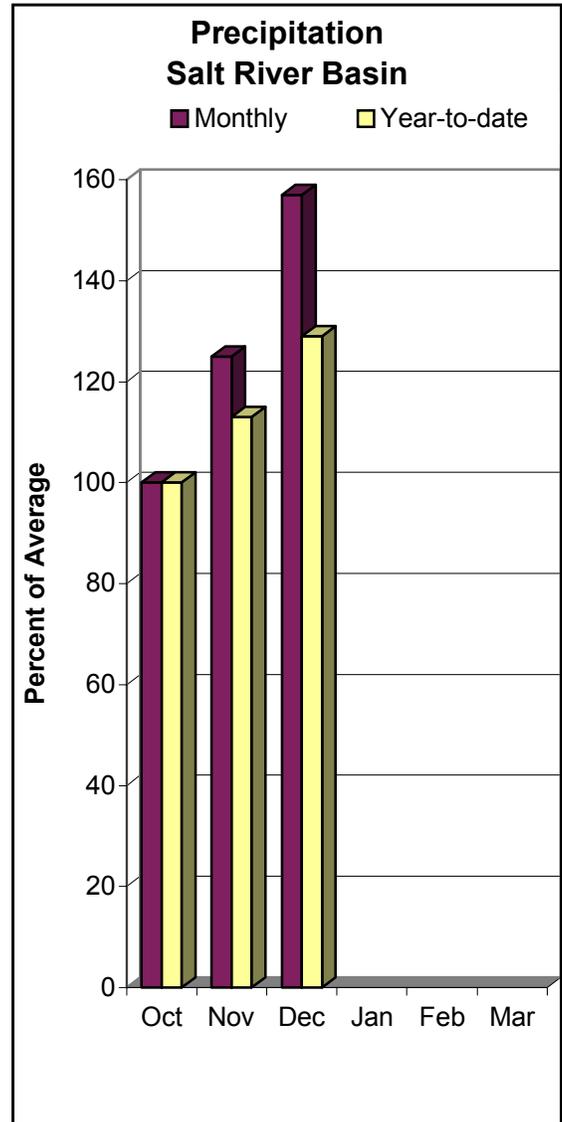
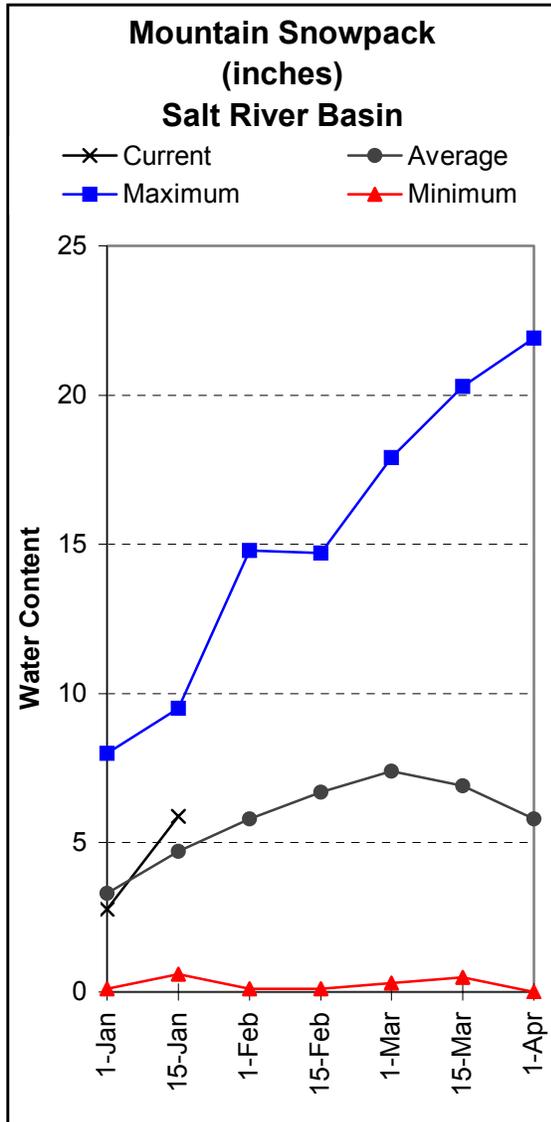
As the result of significant precipitation this winter, well above median streamflow levels are forecast this season for major streams monitored in this report. Please refer to the basin forecast tables for more information regarding this years predicted surface water supplies.



SALT RIVER BASIN as of January 15, 2005

Well above median streamflow levels are forecast for the basin. In the Salt River, near Roosevelt, the forecast calls for 155 % of median streamflow levels through MAY, while in Tonto Creek, the forecast calls for 227 % of median streamflow levels through MAY.

Additionally, snow survey measurements show the Salt snowpack to be 125 % of the 30-year average, while combined reservoir storage for the Salt River system was reported at 1,081,257 acre-feet.



SALT RIVER BASIN
Streamflow Forecasts - January 15, 2005

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							
JAN15-MAY	257	426	575	155	755	1084	370
JANUARY	54	98	135	551	178	253	25
Tonto Creek ab Gun Creek nr Roosevelt							
JAN15-MAY	33	78	125	227	187	312	55
JANUARY	38.13	65.85	89.00	1509	115.63	161.11	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.

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

Reservoir	Usable Capacity	***** Usable Storage *****		
		This Year	Last Year	Average
SALT RIVER RES SYSTEM	2025.8	1081.2	836.4	1181.3

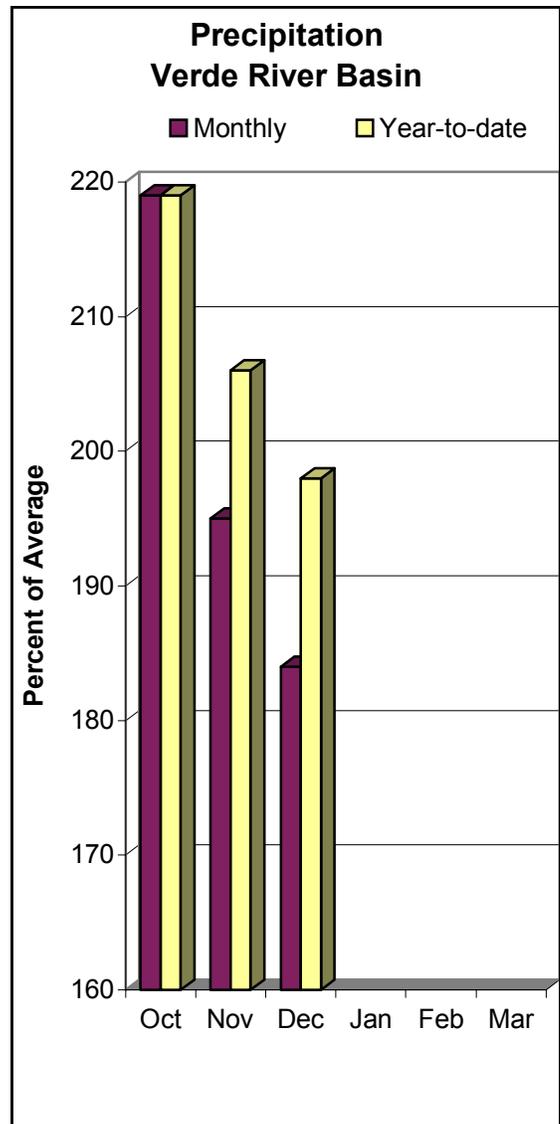
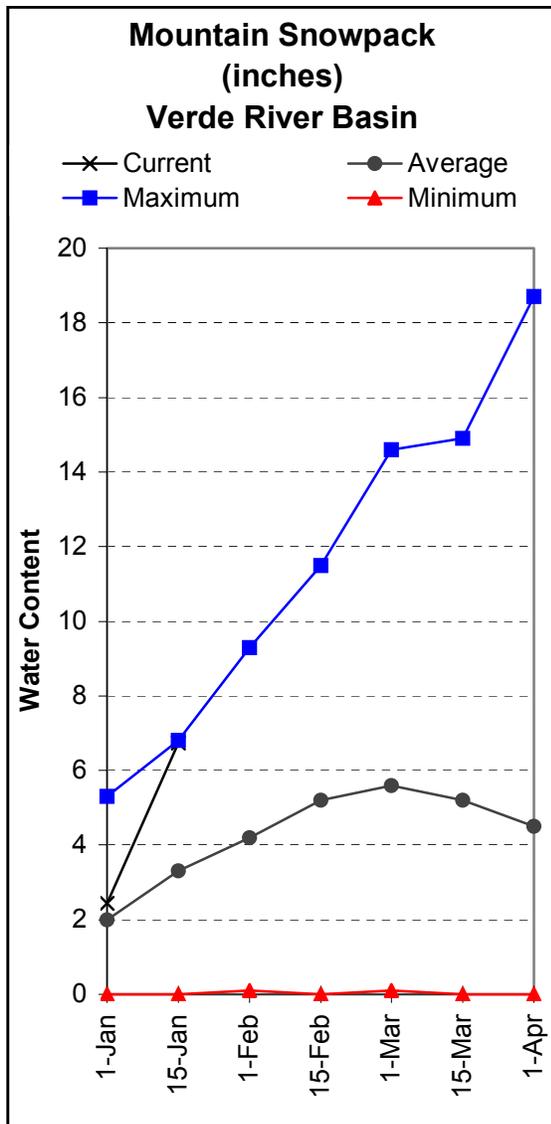
SALT RIVER BASIN
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of	
		Last Year	Average
SALT RIVER BASIN	8	337	125

VERDE RIVER BASIN as of January 15, 2005

Well above median streamflow levels are forecast for the basin. In the Verde River, at Horseshoe Dam, the forecast calls for 226 % of median streamflow levels through MAY.

Additionally, snow survey measurements show the Verde snowpack to be 204 % of the 30-year average, while combined reservoir storage for the Verde River system was reported at 261,194 acre-feet.



VERDE RIVER BASIN
Streamflow Forecasts - January 15, 2005

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)		
Verde River abv Horseshoe Dam							
JAN15-MAY	208	350	475	226	627	906	210
JANUARY	134	205	265	1104	336	463	24

* 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.

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

Reservoir	Usable Capacity	***** This Year	***** Usable Storage Last Year	***** Average
VERDE RIVER RES SYSTEM	287.4	261.2	114.8	141.7

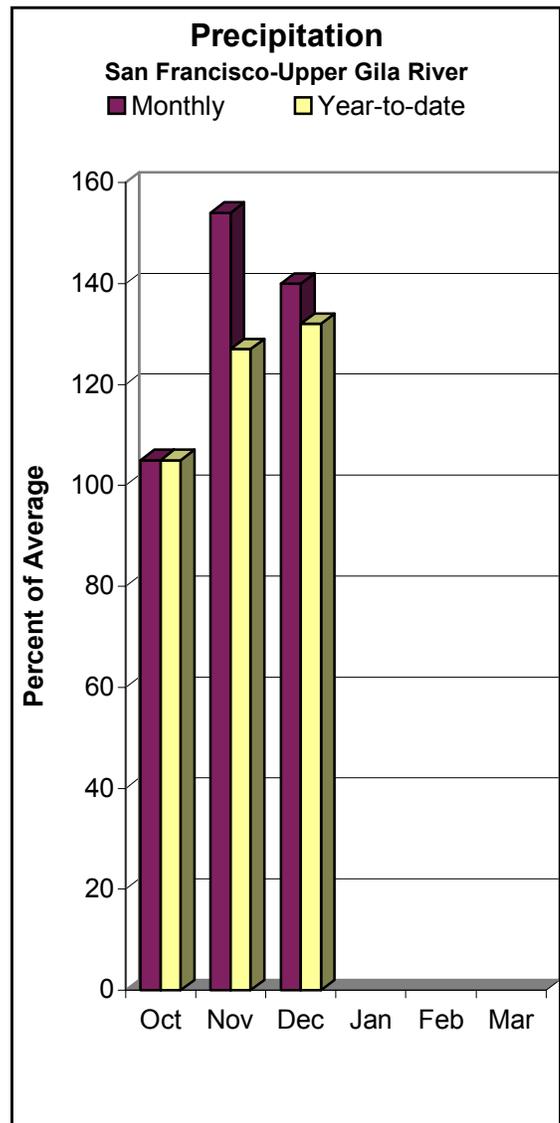
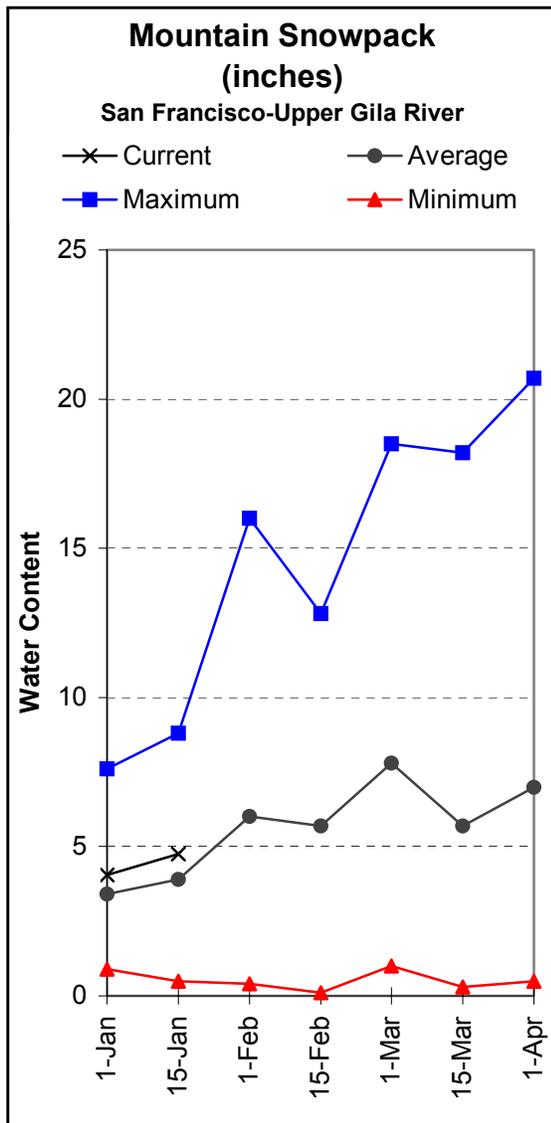
VERDE RIVER BASIN
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of Last Year	Percent of Average
VERDE RIVER BASIN	9	477	204
SAN FRANCISCO PEAKS	3	415	241

SAN FRANCISCO-UPPER GILA RIVER BASIN as of January 15, 2005

Well above median streamflow levels are forecast for the basin. In the San Francisco River, at Clifton, the forecast calls for 147 % of median streamflow levels through MAY, while in the Gila River, near Solomon, the forecast calls for 146 % of median streamflow levels through MAY. At San Carlos Reservoir, inflow into the lake is forecast at 178 % of median through MAY.

At San Carlos, reservoir storage stands at 70,225 acre-feet, while snow survey measurements show basin snowpack levels to be 122 % of the 30-year average.



SAN FRANCISCO - UPPER GILA RIVER BASIN
Streamflow Forecasts - January 15, 2005

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							
JAN15-MAY	44	61	75	136	91	119	55
Gila River nr Virden							
JAN15-MAY	45	80	103	129	126	161	80
San Francisco River at Glenwood							
JAN15-MAY	26	38	48	185	59	79	26
San Francisco River at Clifton							
JAN15-MAY	36	72	97	147	122	158	66
Gila River nr Solomon							
JAN15-MAY	82	170	230	146	290	380	158
JANUARY			92	467			19.7
San Carlos Reservoir inflow							
JAN15-MAY	49	115	160	178	205	270	90

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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	70.2	26.8	409.3

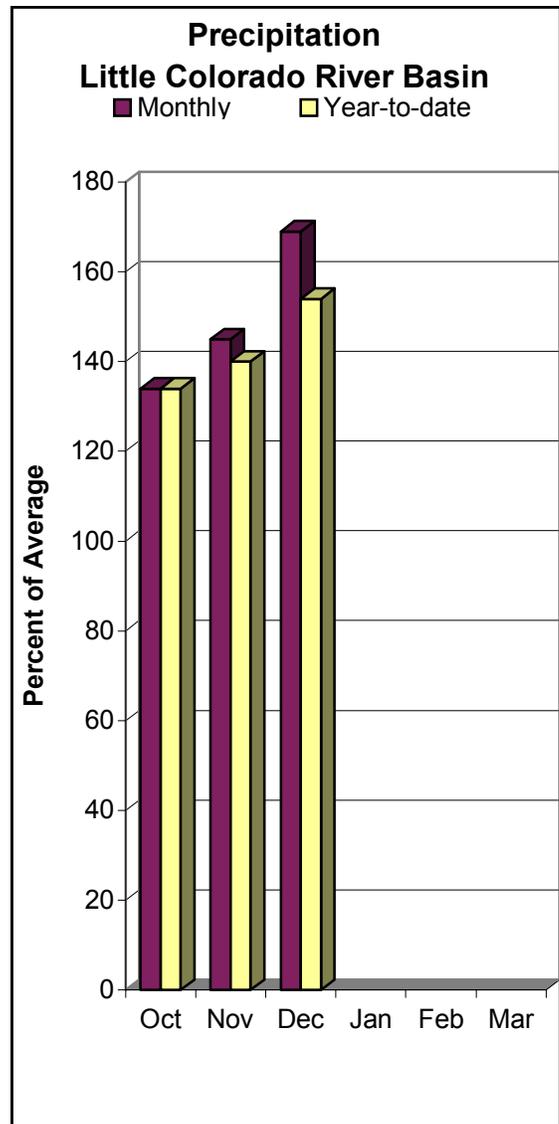
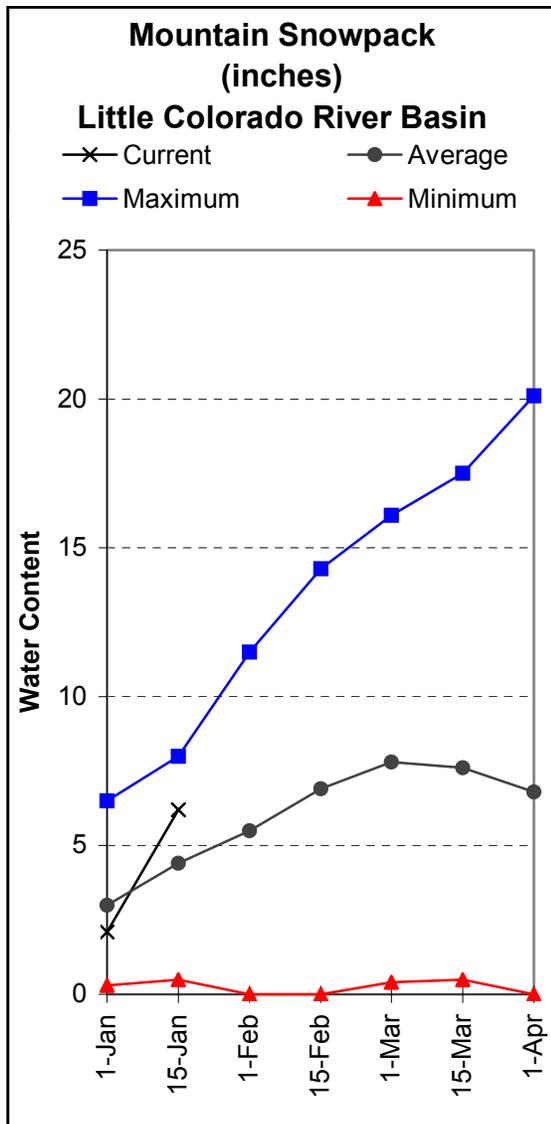
SAN FRANCISCO - UPPER GILA RIVER BASIN
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
SAN FRANCISCO - UPPER GILA R	9	364	122

LITTLE COLORADO RIVER BASIN as of January 15, 2005

Well above median streamflow levels are forecast for the basin. In the Little Colorado River, at Lyman Lake, the forecast calls for 199 % of median streamflow levels through JUNE.

Furthermore, snowpack levels along the southern headwaters of the Little Colorado River, and along the central Mogollon Rim, were measured at 141 % and 171 % of the 30-year average, respectively.



LITTLE COLORADO RIVER BASIN
Streamflow Forecasts - January 15, 2005

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	5.75	10.41	14.70	199	20.03	30.01	7.40
Little Colorado River at Woodruff							
JAN-MAY	5.25	8.50	10.70	297	12.90	16.10	3.60
Blue Ridge Reservoir inflow							
JAN-MAY	19.8	29	37	216	46	60	17.1
Lake Mary inflow							
JAN-MAY	8.58	12.63	16.00	320	19.92	26.81	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.

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

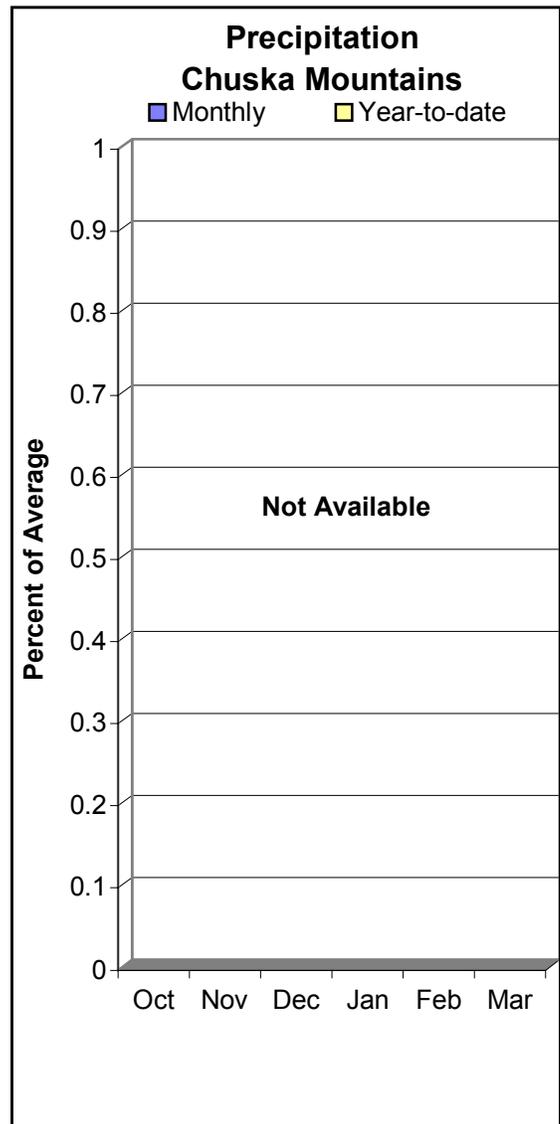
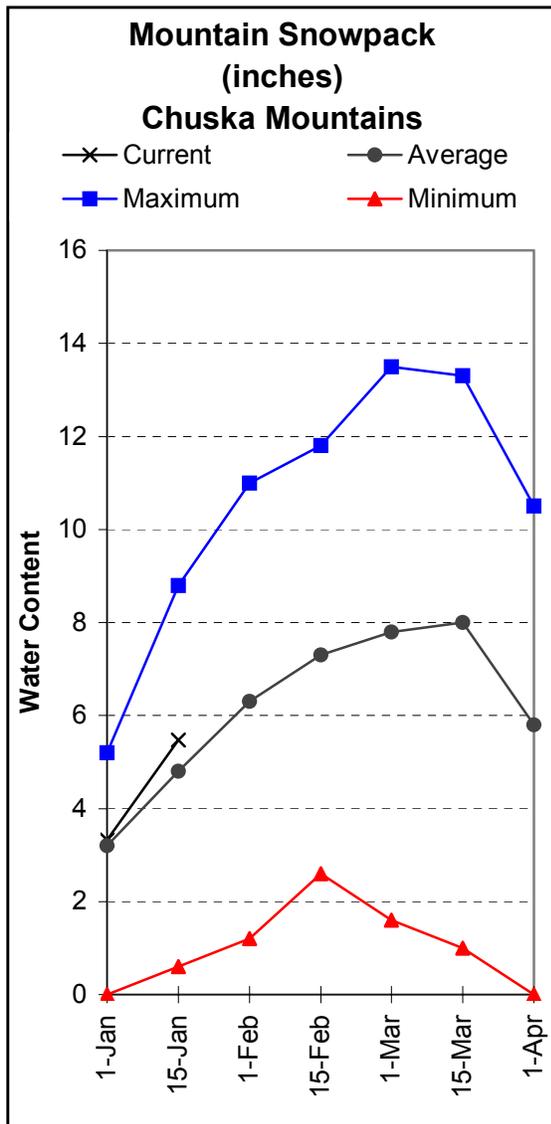
Reservoir	Usable Capacity	***** This Year	Usable Storage Last Year	***** Average
LYMAN RESERVOIR	30.0	3.5	2.1	14.3
SHOW LOW LAKE	5.1	3.6	3.1	2.6

LITTLE COLORADO RIVER BASIN
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
LITTLE COLORADO - SOUTHERN H	8	411	141
CENTRAL MOGOLLON RIM	3	419	171

CHUSKA MOUNTAINS as of January 15, 2005

Navajo Nation snowpack levels in the Chuska Mountains, and the Defiance Plateau, were measured at 114 % and 84 % of average, respectively, while well above average runoff is forecast for Captain Tom Wash, Wheatfields Creek, and Bowl Canyon Creek this season.



CHUSKA MOUNTAINS
Streamflow Forecasts - January 15, 2005

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	0.75	2.70	4.00	141	5.30	7.20	2.83
Wheatfields Creek nr Wheatfields							
MAR-MAY	0.76	2.70	4.10	141	5.50	7.40	2.90
Bowl Canyon Creek abv Assayi Lake							
MAR-MAY	0.30	0.98	1.45	145	1.92	2.63	1.00

* 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 is computed for the 1971-2000 base period.

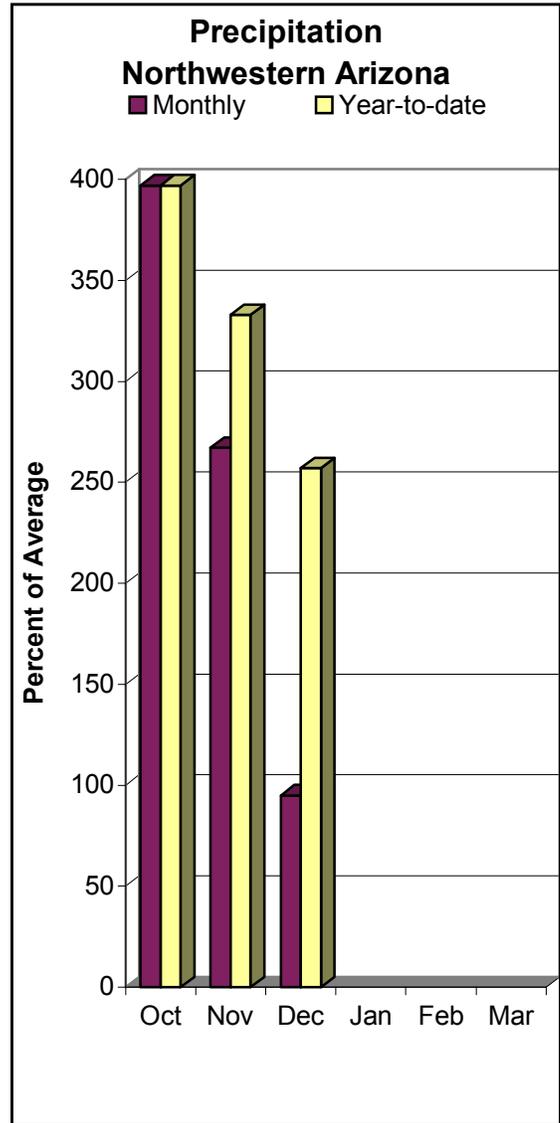
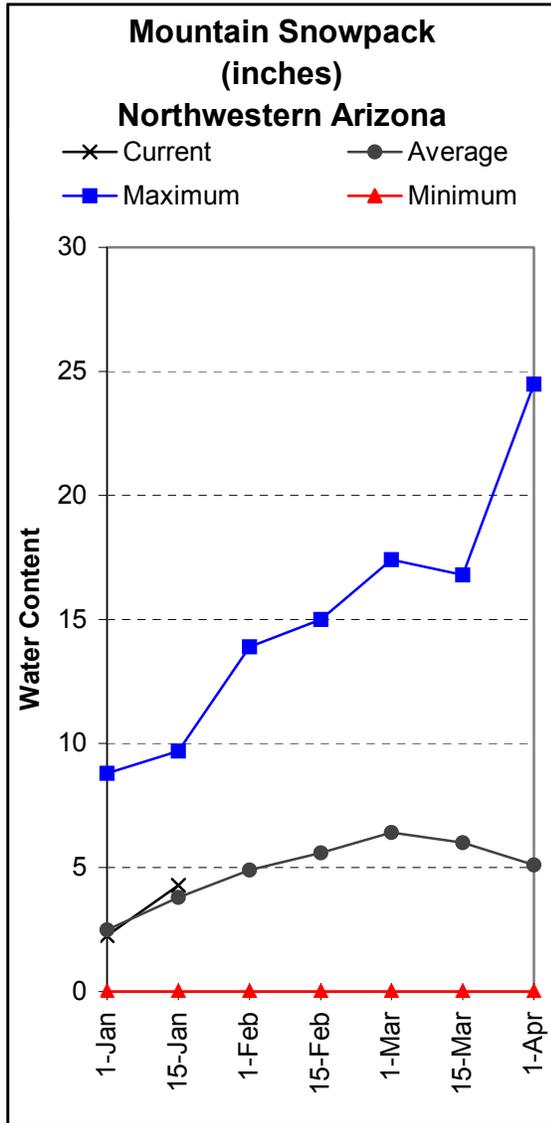
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CHUSKA MOUNTAINS
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of Last Year	Average
CHUSKA MOUNTAINS	7	167	114
DEFIANCE PLATEAU	2	123	84

NORTHWESTERN ARIZONA as of January 15, 2005

Inflow into Lake Powell, on the Colorado River, is forecast at 120 % of average through JULY, while at the Grand Canyon, snow survey measurements conducted by National Park Service personnel show the snowpack to be 113 % of the 30-year average.



NORTHWESTERN ARIZONA
Streamflow Forecasts - January 15, 2005

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							
APR-JUL	6664	8353	9500	120	10649	12339	7930

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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.

NORTHWESTERN ARIZONA
Reservoir Storage (1000AF) Mid-January

Reservoir	Usable Capacity	***** Usable Storage *****		
		This Year	Last Year	Average
LAKE HAVASU	619.0	584.8	510.5	557.4
LAKE MOHAVE	1810.0	1723.2	1606.3	1657.0
LAKE MEAD	26159.0	14759.0	15385.0	21868.0
LAKE POWELL	24322.0	8604.0	11236.0	18748.0

NORTHWESTERN ARIZONA
Watershed Snowpack Analysis - January 15, 2005

Watershed	Number of Data Sites	This Year as Percent of	
		Last Year	Average
GRAND CANYON	2	166	113

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

JANUARY 15, 2005

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
ARBABS FOREST (AK)	7680	1/13	4	.8	1.0	1.7
BAKER BUTTE SNOTEL	7330	1/15	-	6.6	1.3	3.5
BAKER BUTTE #2	7700	1/13	36	11.6	2.6	6.5
BALDY SNOTEL	9220	1/15	-	6.1	1.8	4.5
BEAVER HEAD	8000	1/13	9	3.8	0.0	2.1
BEAVER HEAD SNOTEL	7990	1/15	-	4.6	1.9	2.5
BEAVER SPRING	9220	1/12	34	8.7	3.4	5.9
BRIGHT ANGEL	8400	1/13	33	7.1	4.5	5.7
BUCK SPRING	7400	1/13	8	2.0	0.0	4.1
CHALENDER	7100	1/13	10	2.7	0.0	2.1
CHEESE SPRINGS	8600	1/13	14	3.8	1.4	3.3
CORONADO TRL SNOTEL	8400	1/15	-	4.7	0.7	2.8
CORONADO TRAIL	8400	1/13	12	4.2	0.0	2.1
FLUTED ROCK	7800	1/14	8	2.4	1.6	2.1
FORT APACHE	9160	1/13	24	5.5	1.9	4.8
FORT VALLEY	7350	1/14	14	4.6	0.6	1.9
FRY SNOTEL	7220	1/15	-	9.8	2.2	4.0
GRAND CANYON	7500	1/13	5	1.7	0.8	2.1
HANNAGAN MDWS SNOTEL	9020	1/15	-	10.5	2.9	7.0
HAPPY JACK	7630	1/11	17	4.6	0.6	3.0
HAPPY JACK SNOTEL	7630	1/15	-	6.8	1.9	2.9
HEBER SNOTEL	7640	missing			1.5	3.9
LAKE MARY	6970	1/13	9	3.9	0.2	2.0
MAVERICK FORK SNOTEL	9200	1/15	-	7.6	2.0	5.7
MORMON MTN SNOTEL	7500	1/15	-	8.4	1.7	3.8
MORMON MT. SUMMIT #2	8470	1/13	43	13.2	3.1	6.9
NEWMAN PARK	6750	1/14	16	5.9	0.0	2.1
NUTRIOSO	8500	1/13	5	1.5	0.0	1.4
PROMONTORY SNOTEL	7900	1/15	-	11.1	3.1	7.1
SNOW BOWL #1 ALT.	10260	1/10	81	21.6	2.4	7.4
SNOW BOWL #2	11000	1/10	62	16.2	4.2	10.4
SNOWSLIDE CYN SNTL	9750	1/15	-	24.4	8.4	8.0
TSAILE CANYON #1	8160	1/11	12	4.1	2.9	4.2
TSAILE CANYON #3	8920	1/11	21	6.4	4.6	5.6
WHITE HORSE SNOTEL	7180	missing			1.2	3.2
WILDCAT SNOTEL	7850	1/15	-	1.9	0.8	2.8
WILLIAMS SKI RUN	7720	1/13	26	7.3	2.9	4.8
WORKMAN CREEK SNOTEL	6900	1/15	-	5.7	2.4	4.3