



# Utah Water Supply Outlook Report

January 1, 2003



Parleys Canyon Near Salt Lake City, Jan 7, 2003

Photo by Jennifer Erxleben, Snow survey, NRCS, USDA

# Water Supply 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 snowcourses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation 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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# STATE OF UTAH GENERAL OUTLOOK

Jan 1, 2003

## SUMMARY

The current water supply outlook is a continuation of the past four years – below average. Snowpacks across the state range from a low of 66% on the Provo/Jordan River watersheds, closely followed by the Virgin and southwest Utah at 68% to a high of only 85% across southeast Utah. Snowpacks across the rest of the state are close to 75% of normal. Most watersheds have only a 20% to 35% probability of getting sufficient snowpack over the next three months to return to average conditions by April 1. A poor beginning to what could easily be a fifth consecutive year of drought for most of the state. Warm temperatures have also impacted low elevation snowpacks, with many of these in the 50% range. Statewide precipitation in October, November and December were below average. Early season precipitation has improved soil moisture values substantially over much of the state. This should improve snowmelt runoff efficiency over what we have seen the past few years, where much of the snowpack has been lost to soil moisture replacement. The improvement in soil moisture is really the only positive aspect to current water supply conditions. Reservoir storage in 41 major reservoirs across the state is down almost 650,000 acre feet from last year, out of a total capacity of 5, 470,000; or about 12 %. The amount of water represented by 650,000 acre feet is a little more than 2 completely full Jordanelle reservoirs, a substantial deficit of reservoir storage. Some larger reservoirs, such as Bear Lake and Utah Lake would take several years of at least average runoff to fill to capacity. Streamflow continues to be much below average over most of the state, and won't improve significantly until snowmelt season. Thus there will be little reservoir recharge over the winter months.

## SNOWPACK

January first snowpacks as measured by the NRCS SNOTEL system are near 75% of average on the Bear, Weber, Uintahs and Sevier River Watersheds. The Provo and the Virgin/southwest Utah are the lowest at 66% and 68% respectively. Southeast Utah, particularly the Price/San Rafael and the Dirty Devil drainages are the highest at 85% of normal. Low elevation snowpacks have been impacted by warmer than normal temperatures of the past few weeks and some are 50% of average and below. Higher elevation snowpacks have simply not materialized with one area of particular concern. Snowpack at the headwaters of the Bear, Weber, Provo and Duchesne Rivers near Trial Lake is at only 59% of average. A substantial amount of water is generated from this area and a snowpack this low is of concern.

## PRECIPITATION

Mountain precipitation during December was much below to below normal (55%-75%) in the north and below normal (80%-85%) in southern Utah. This brings the seasonal accumulation (Oct-Apr) to 78% of average statewide.

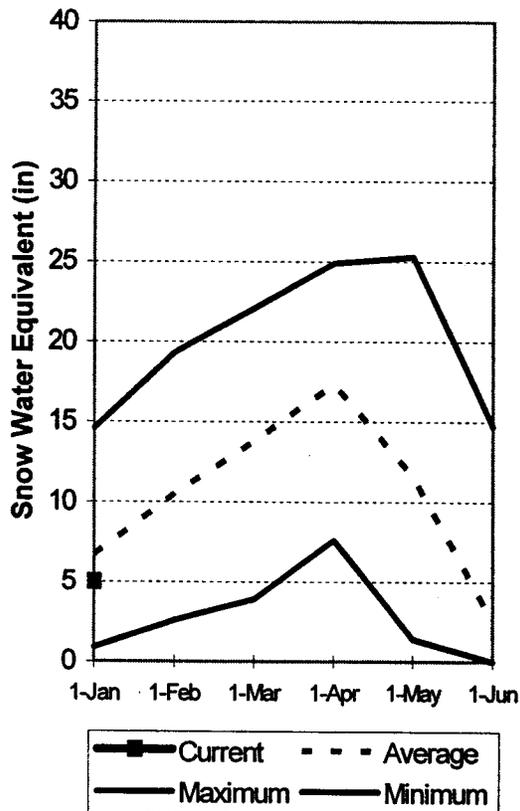
## RESERVOIRS

Storage in 41 of Utah's key irrigation reservoirs is at 47% of capacity. This is down substantially from last year indicating heavy use of reservoir storage to make up the streamflow deficit. Most reservoir operators are utilizing a conservative strategy, storing as much water as possible.

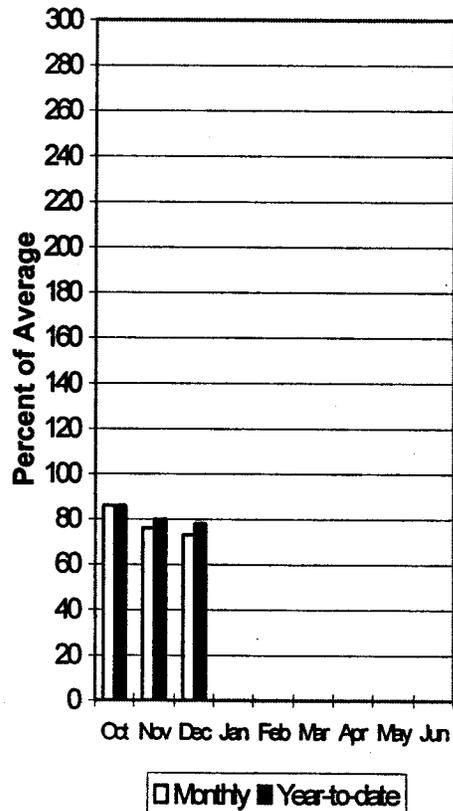
## STREAMFLOW

Snowmelt streamflows are expected to be below average across the entire state of Utah this year. Low snowpacks tend to melt earlier and produce proportionately less runoff. Streams may peak early, have significantly less volume and have short recessions back to base flow. Overall water supply conditions are below normal.

**Mountain Snowpack**  
1/1/2003

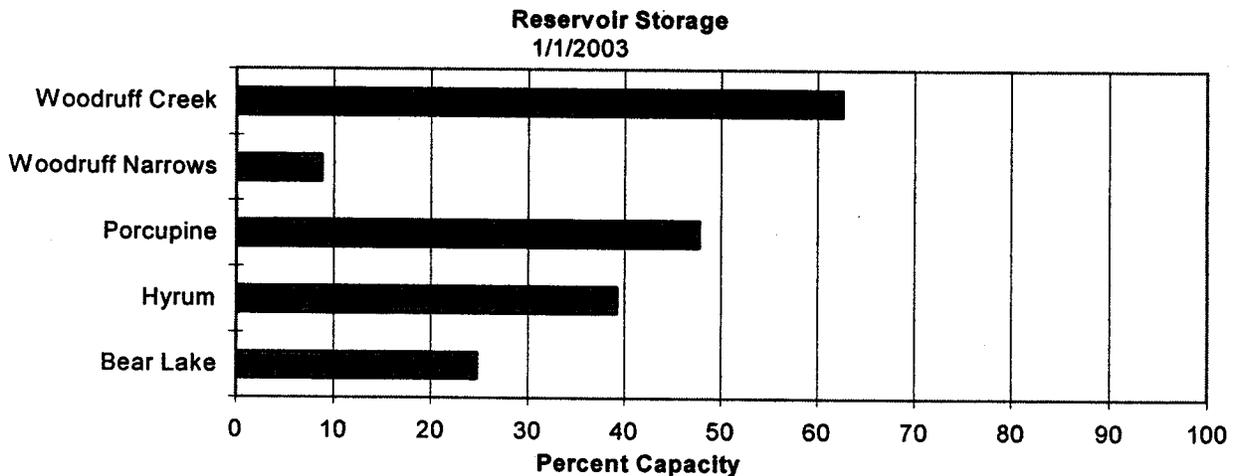
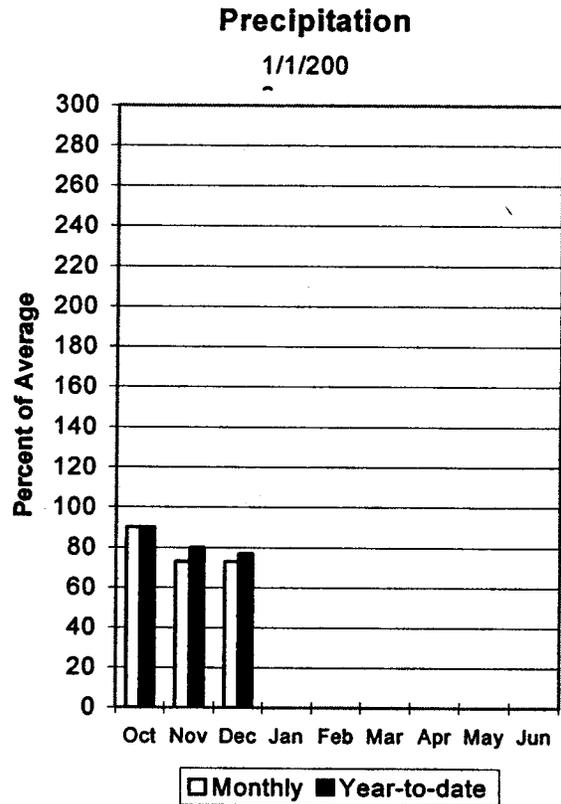
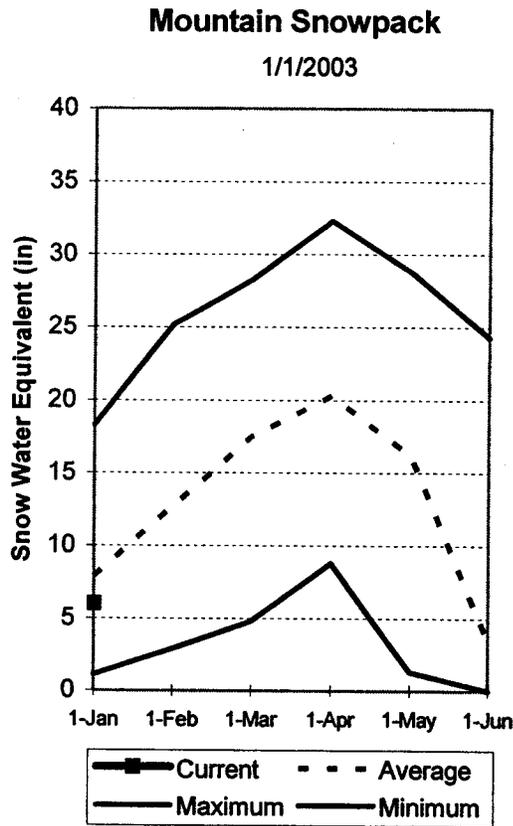


**Precipitation**  
1/1/2003



## Bear River Basin Jan 1, 2003

Snowpacks on the Bear River Basin are below average at 76% of normal, about 74% of last year. Specific sites range from 63% to 103% of normal. This could be the sixth consecutive below normal April 1 snowpack for this watershed. Soil moisture conditions are somewhat improved from last year and may offer higher runoff efficiency. December precipitation was below average at 73%, which brings the seasonal accumulation (Oct-Dec) to 77% of average. Forecast streamflows are for below normal volumes this spring. Reservoir storage is at 25% of capacity, 15% less than last year. Water supply conditions are below normal due to low snowpack and low reservoir storage.



**BEAR RIVER BASIN**  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
				Chance Of Exceeding *				
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Bear R nr UT-WY State Line	APR-JUL	40	65	71	63	78	98	113
BEAR R nr Woodruff, UT	APR-JUL	22	74	91	61	112	158	149
BIG CK nr Randolph	APR-JUL	0.35	0.84	2.30	61	3.76	5.92	3.80
BEAR R nr Randolph, UT	APR-JUL	7.0	36	62	54	88	127	115
SMITHS FK nr Border, WY	APR-JUL	31	49	55	54	62	79	102
THOMAS FK nr WY-ID State Line (Disc.)	APR-JUL			Much Below Average				33
BEAR R blw Stewart Dam nr Montpelier	APR-JUL	18.0	73	110	38	147	202	288
MONTPELIER CK nr Montpelier (Disc) (2)	APR-JUL			Much Below Average				12.2
CUB R nr Preston	APR-JUL			Much Below Average				47
L BEAR R at Paradise, UT	APR-JUL	16.2	20	23	49	27	33	47
LOGAN R nr Logan	APR-JUL	41	67	72	59	78	102	122
BLACKSMITH Fk nr Hyrum	APR-JUL	10.8	30	32	59	35	55	54

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of March					BEAR RIVER BASIN Watershed Snowpack Analysis - April 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BEAR LAKE	1421.0	605.5	911.1	923.8	BEAR RIVER, UPPER (abv Ha	6	126	74
HYRUM	15.3	14.8	14.6	12.2	BEAR RIVER, LOWER (blw Ha	8	174	73
PORCUPINE	11.3	11.3	9.0	6.7	LOGAN RIVER	4	156	77
WOODRUFF NARROWS	57.3	9.3	---	32.7	RAFT RIVER	1	238	110
WOODRUFF CREEK	4.0	2.3	2.0	---	BEAR RIVER BASIN	14	151	74

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

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

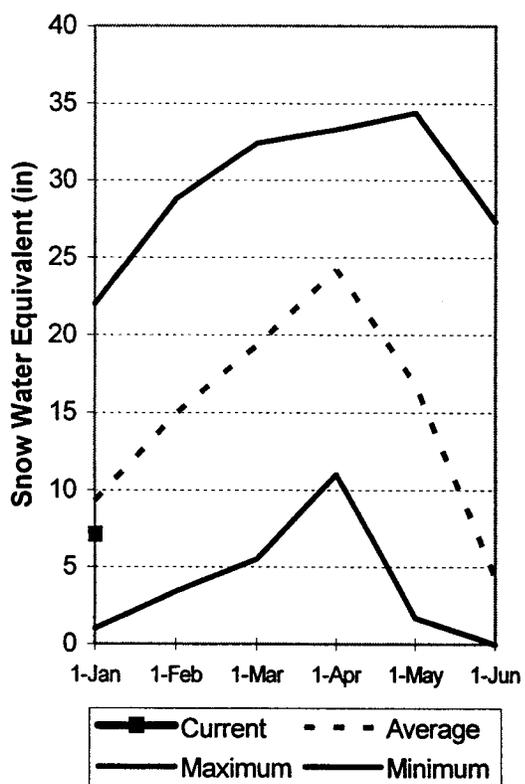
# Weber and Ogden River Basins

Jan 1, 2003

Snowpack on the Weber and Ogden Watersheds is at 76% of average, about 74% of last year. Individual sites range from 54% to 93% of average. This could be the fifth consecutive year of below normal April 1 snowpack for this watershed. Soil moisture conditions are somewhat improved from last year and may yield a higher runoff efficiency. Precipitation during December was below normal at 73%, bringing the seasonal accumulation (Oct-Dec) to 77% of average. Reservoir storage is at 42% of capacity, down 6% from last year. Streamflow forecasts are below average. Overall water supply conditions are marginal due to poor snowpack and low reservoir storage.

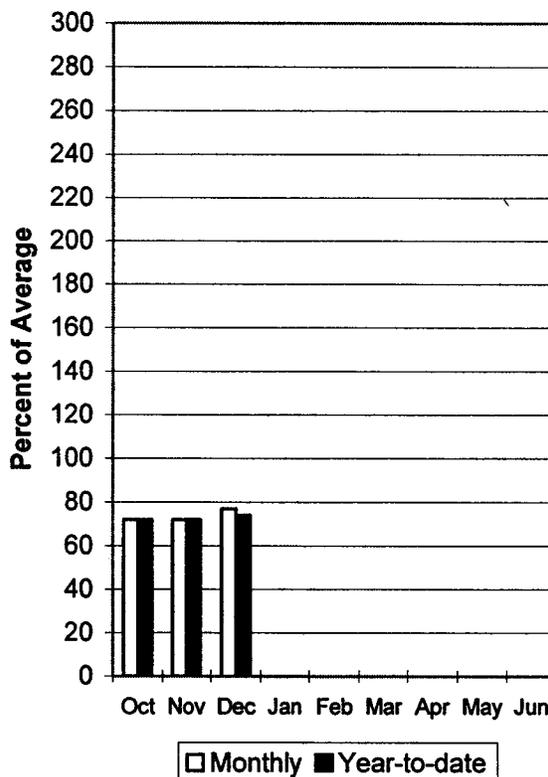
## Mountain Snowpack

1/1/2003



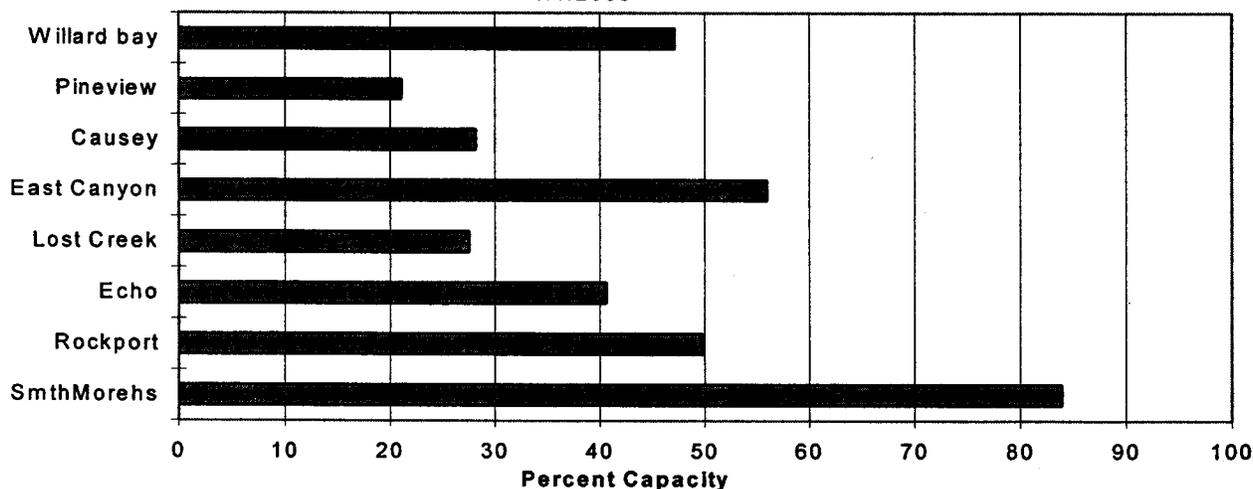
## Precipitation

1/1/2003



## Reservoir Storage

1/1/2003



WEBER & OGDEN WATERSHEDS in Utah  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	<<----- Drier ----->>		Future Conditions		----- Wetter ----->>		30-Yr Avg. (1000AF)
		90%	70%	Chance Of Exceeding *		30%	10%	
		(1000AF)	(1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	(1000AF)	(1000AF)	
SMITH AND MOREHOUSE CK nr Oakley	APR-JUN	10.7	15.0	18.0	60	21	25	30
WEBER R nr Oakley	APR-JUL	45	66	77	63	88	109	122
ROCKPORT RESERVOIR inflow	APR-JUL	34	71	84	63	97	129	134
CHALK CK at Coalville, Ut	APR-JUL	6.2	23	31	71	39	55	44
WEBER R nr Coalville, Ut	APR-JUL	55	76	91	67	106	127	136
ECHO RESERVOIR Inflow	APR-JUL	46	86	112	64	138	172	176
LOST CK Res Inflow	APR-JUL	4.1	7.5	10.6	62	13.7	17.7	17.2
E CANYON CK nr Morgan	APR-JUL	5.4	15.4	19.0	63	23	31	30
WEBER R at Gateway	APR-JUL	76	192	220	63	248	350	347
S FORK OGDEN R nr Huntsville	APR-JUL	17.0	32	37	59	42	56	63
PINEVIEW RESERVOIR Inflow	APR-JUL	41	66	80	60	94	118	133
WHEELER CK nr Huntsville	APR-JUL	1.87	2.78	3.40	55	4.02	4.93	6.20

WEBER & OGDEN WATERSHEDS in Utah Reservoir Storage (1000 AF) - End of March					WEBER & OGDEN WATERSHEDS in Utah Watershed Snowpack Analysis - April 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CAUSEY	7.1	2.9	2.3	---	OGDEN RIVER	4	131	75
EAST CANYON	49.5	29.0	38.0	36.5	WEBER RIVER	9	132	86
ECHO	73.9	42.4	45.7	51.5	WEBER & OGDEN WATERSHEDS	13	132	82
LOST CREEK	22.5	7.5	10.8	14.1				
PINEVIEW	110.1	59.9	47.3	61.7				
ROCKPORT	60.9	26.6	25.1	35.1				
WILLARD BAY	215.0	109.2	152.0	160.9				

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

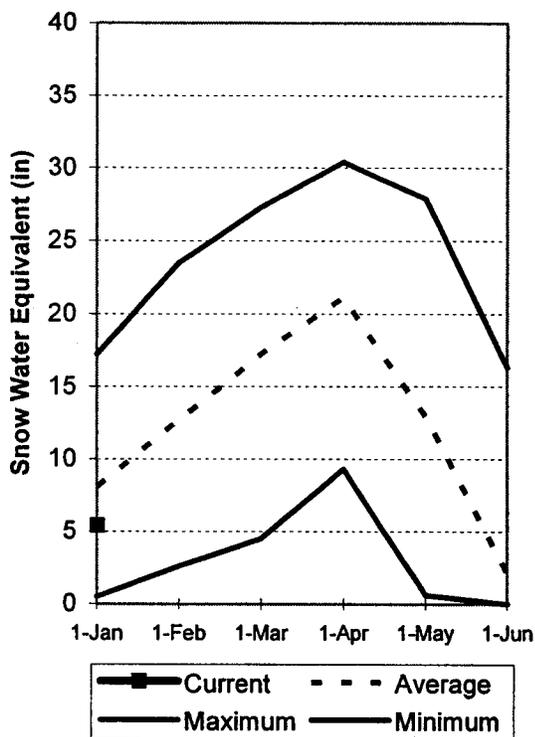
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural flow - actual flow may be affected by upstream water management.

## Utah Lake, Jordan River & Tooele Valley Basins Jan 1, 2003

Snowpacks over these watersheds are at 66% of average, 63% of last year and rank as the lowest in the state. Individual sites range from 53% to 96% of average. This could be the fifth consecutive year of below normal April 1 snowpack on these watersheds. Soil moisture is somewhat improved from last year and may yield a higher runoff efficiency. Precipitation during December was much below normal at 65%, bringing the seasonal accumulation (Oct-Dec) to 70% of average. Forecast streamflows are below normal. Reservoir storage is at 66% of capacity, 13% less than last year. General water supply conditions are poor due to low snowpack and low reservoir storage.

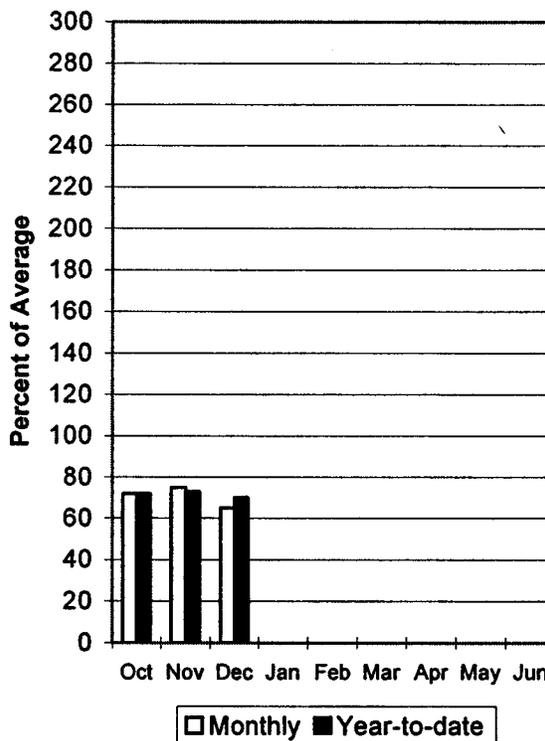
### Mountain Snowpack

1/1/2003



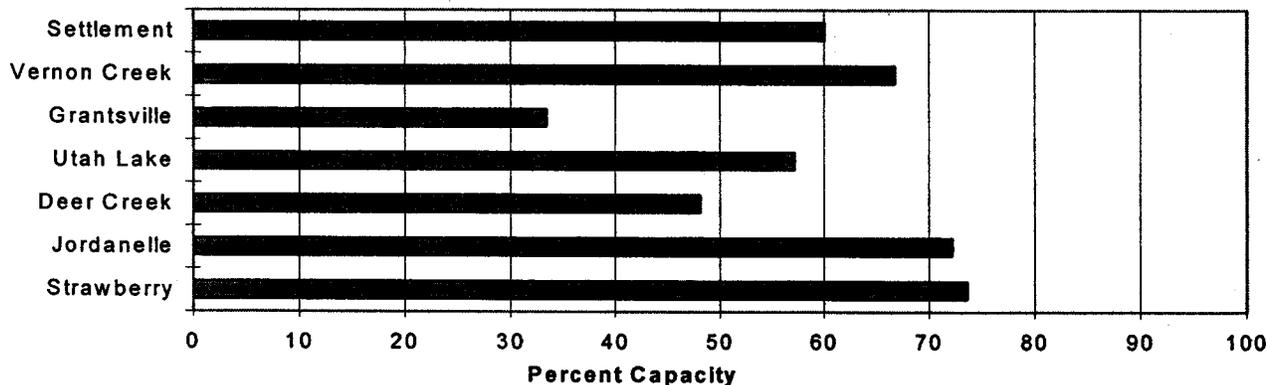
### Precipitation

1/1/2003



### Reservoir Storage

1/1/2003



**UTAH LAKE, JORDAN RIVER & TOOELE VALLEY**  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<----- Drier ----->>		----->>		----->>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
SPANISH FORK nr Castilla	APR-JUL	6.2	26	46	60	66	86	77
PROVO R nr Hailstone	APR-JUL	29	51	65	60	79	101	109
PROVO R below Deer Creek Dam	APR-JUL	32	63	83	66	103	134	126
AMERICAN FORK nr American Fk.	APR-JUL	10.2	14.2	17.0	53	19.8	24	32
UTAH LAKE inflow	APR-JUL	33	117	170	52	223	306	325
L COTTONWOOD CRK nr SLC	APR-JUL	30	33	36	90	39	42	40
BIG COTTONWOOD CRK nr SLC	APR-JUL	26	31	34	90	37	42	38
PARLEY'S CK nr SLC	APR-JUL	6.8	10.9	14.0	84	17.1	21	16.7
MILL CK nr SLC	APR-JUL	3.92	5.43	6.50	93	7.57	9.10	7.00
DELL FK nr SLC	APR-JUL	1.90	4.24	5.70	84	7.16	9.52	6.80
EMIGRATION CK nr SLC	APR-JUL	1.26	2.90	4.10	91	5.30	7.02	4.50
CITY CK nr SLC	APR-JUL	4.61	6.62	8.00	92	9.38	11.40	8.70
VERNON CK nr Vernon (Acre Feet)	APR-JUL	333	454	560	42	691	941	1340
SETTLEMENT CK nr Tooele (Acre Feet)	APR-JUL	326	573	840	37	1231	2161	2300
S WILLOW CK nr Grantsville	APR-JUL	0.03	0.39	1.20	38	2.01	3.20	3.20

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY Reservoir Storage (1000 AF) - End of March					UTAH LAKE, JORDAN RIVER & TOOELE VALLEY Watershed Snowpack Analysis - April 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DEER CREEK	149.7	103.2	136.1	113.0	PROVO RIVER & UTAH LAKE	7	137	65
GRANTSVILLE	3.3	2.0	2.2	2.7	PROVO RIVER	4	150	64
SETTLEMENT CREEK	1.0	0.8	0.8	0.7	JORDAN RIVER & GREAT SALT	6	153	97
STRAWBERRY-ENLARGED	1105.9	898.4	948.3	648.8	TOOELE VALLEY WATERSHEDS	3	106	69
UTAH LAKE	870.9	668.8	778.5	855.8	UTAH LAKE, JORDAN RIVER &	16	140	79
VERNON CREEK	0.6	0.6	0.6	---				

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

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

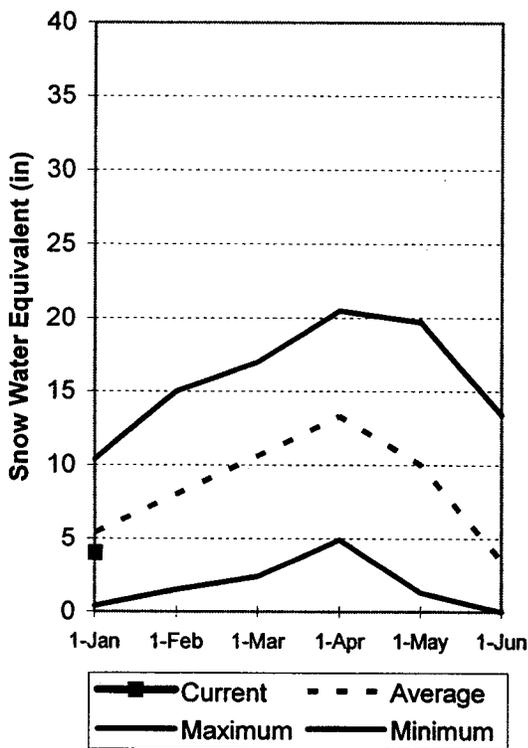
# Uintah Basin and Dagget SCD's

Jan 1, 2003

Snowpacks across the Uintah Basin and North Slope areas are below average at 74%, which is 93% of last year's snowpack. The North Slope ranges from 38% to 98% and the Uintah Basin ranges from 50% to 100% of average. This could be the fifth consecutive below normal April 1 snowpack in the Uintah Basin. Soil moisture is somewhat improved over last year and may yield a higher runoff efficiency. Precipitation during December was much below normal at 57%, bringing the seasonal accumulation (Oct-Dec) to 75% of average. Reservoir storage is at 72% of capacity, down 9% from last year. Springtime runoff conditions are below normal due to low snowpack and low reservoir storage.

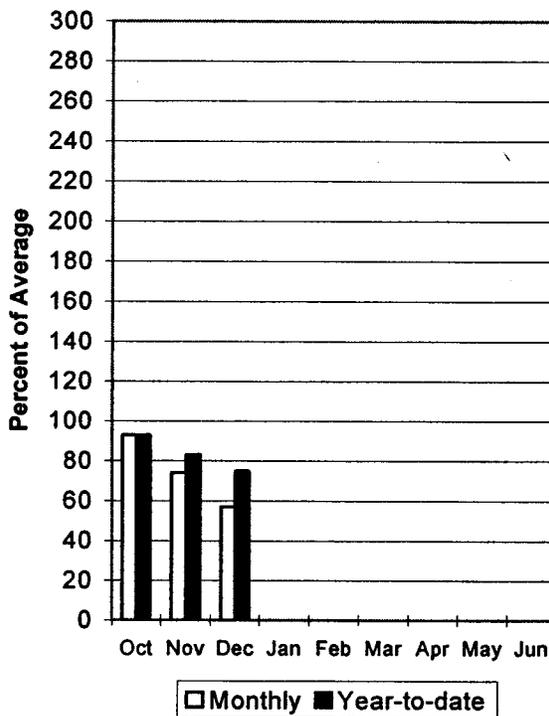
## Mountain Snowpack

1/1/2003



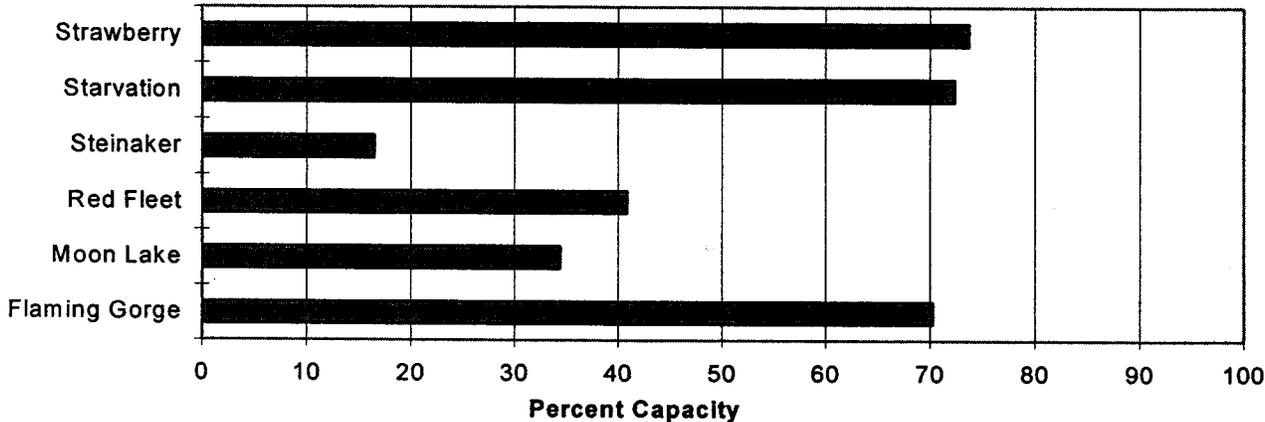
## Precipitation

1/1/2003



## Reservoir Storage

1/1/2003



**UINTAH BASIN & DAGGET SCD'S**  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Chance Of Exceeding *		Wetter		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Blacks Fork nr Robertson	APR-JUL	41	50	56	59	65	79	95
EF of Smiths Fork nr Robertson	APR-JUL	13.6	15.7	17.2	56	18.9	22	31
Flaming Gorge Reservoir Inflow	APR-JUL	419	598	720	61	842	1021	1190
BIG BRUSH CK abv Red Fleet Resv	APR-JUL	5.8	9.8	12.5	60	15.2	19.2	21
Ashley Creek nr Vernal	APR-JUL	12.4	22	29	56	36	46	52
WF DUCHESNE RIVER nr Hanna	APR-JUL	6.2	9.4	12.0	50	14.9	19.6	24
DUCHESNE R nr Tabiona	APR-JUL	38	51	60	57	69	82	105
UPPER STILLWATER RESV inflow	APR-JUL	29	37	42	51	51	63	82
ROCK CK nr Mountain Home	APR-JUL	31	42	50	56	58	69	89
DUCHESNE R abv Knight Diversion	APR-JUL	38	69	90	48	111	142	188
STRAWBERRY RES nr Soldier Springs	APR-JUL	12.6	19.5	25	42	31	42	59
CURRENT CREEK RESV Inflow	APR-JUL	2.9	6.4	8.8	35	11.2	14.7	25
STARVATION RESERVOIR inflow	APR-JUL	37	44	49	41	64	87	121
Yellowstone River nr Altonah	APR-JUL	23	30	35	57	43	55	62
DUCHESNE R at Myton	APR-JUL	58	77	90	35	131	191	260
Whiterocks River nr Whiterocks	APR-JUL	11.3	23	30	54	38	49	56
DUCHESNE R nr Randlett	APR-JUL	47	73	90	28	186	326	325

UINTAH BASIN & DAGGET SCD'S Reservoir Storage (1000 AF) - End of March					UINTAH BASIN & DAGGET SCD'S Watershed Snowpack Analysis - April 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
FLAMING GORGE	3749.0	2828.5	3025.0	2920.0	UPPER GREEN RIVER in UTAH	6	92	68
MOON LAKE	49.5	16.2	21.6	30.8	ASHLEY CREEK	2	84	60
RED FLEET	25.7	19.2	20.0	18.8	BLACK'S FORK RIVER	2	113	73
STEINAKER	33.4	20.9	25.5	24.2	SHEEP CREEK	1	70	70
STARVATION	165.3	166.7	162.3	138.6	DUCHESNE RIVER	11	76	59
STRAWBERRY-ENLARGED	1105.9	898.4	948.3	648.8	LAKE FORK-YELLOWSTONE CRE	4	63	58
					STRAWBERRY RIVER	4	105	55
					UINTAH-WHITEROCKS RIVERS	2	72	70
					UINTAH BASIN & DAGGET SCD	17	81	61

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

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

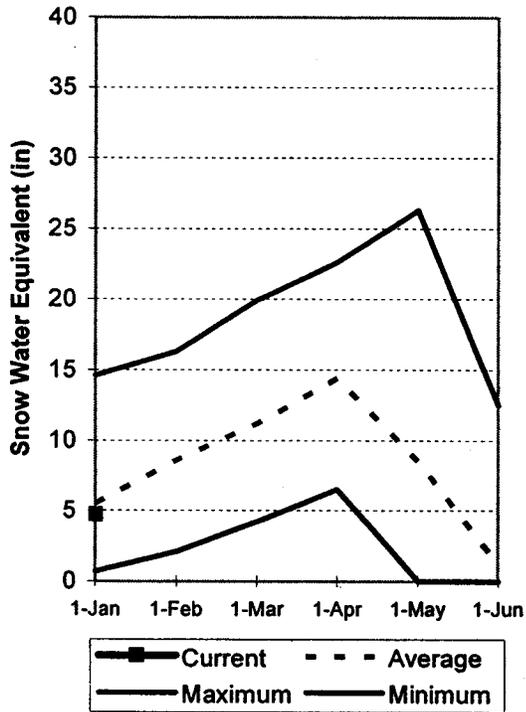
# Carbon, Emery, Wayne, Grand and San Juan Co.

Jan 1, 2003

Snowpacks in this region are below normal at 85% of average, about the same as last year. Individual sites range from 59% to 104% of average. This could be the fifth consecutive below normal April 1 snowpack for this region. Soil moisture is somewhat improved over last year and may yield a higher runoff efficiency. Precipitation during December was below average at 84%, bringing the seasonal accumulation (Oct-Dec) to 89% of normal. Reservoir storage is at 30% of capacity, down 24% from last year. General runoff and water supply conditions are below normal due to low snowpack and low reservoir storage.

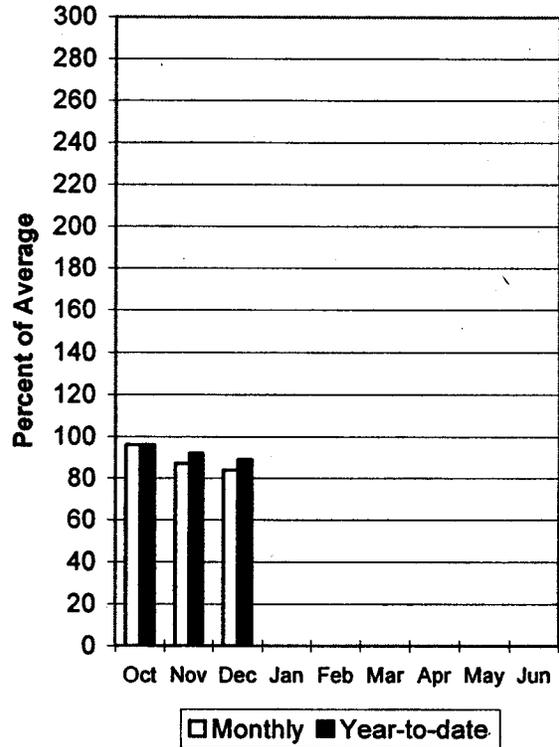
## Mountain Snowpack

1/1/2003



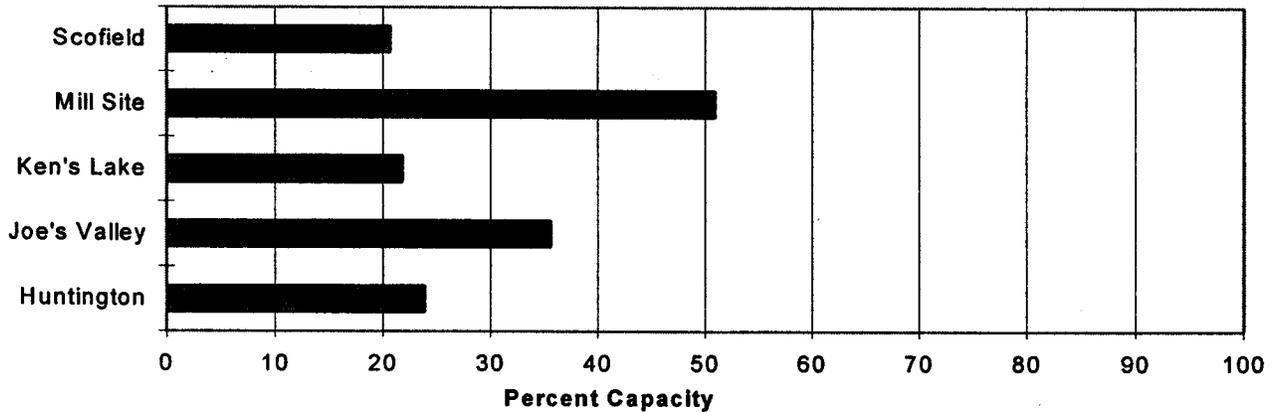
## Precipitation

1/1/2003



## Reservoir Storage

1/1/2003



CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	Future Conditions <<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Gooseberry Creek nr Scofield	APR-JUL	3.1	4.8	5.9	50	7.0	8.7	11.9
Scofield Reservoir inflow	APR-JUL	13.2	17.9	21	46	24	29	46
White River blw Tabbyune Creek	APR-JUL	3.3	5.3	7.0	40	8.9	12.1	17.4
Green River at Green River, UT	APR-JUL	515	1131	1550	49	1969	2585	3170
Electric Lake inflow	APR-JUL	4.5	5.9	7.0	45	8.3	10.3	15.7
HUNTINGTON CK nr Huntington	APR-JUL	15.3	21	24	48	28	33	50
JOE'S VALLEY RESV Inflow	APR-JUL	10.7	21	28	48	35	45	58
Ferron Creek nr Ferron	APR-JUL	14.7	18.3	21	54	24	28	39
Colorado River nr Cisco	APR-JUL	562	1329	1850	42	2371	3138	4400
Mill Creek at Shelley Tunnel nr Moab	APR-JUL	0.99	1.59	2.00	40	3.02	4.53	5.00
Seven Mile Creek nr Fish Lake	APR-JUL	1.88	2.50	4.00	57	5.50	7.72	7.00
Muddy Creek nr Emery	APR-JUL	4.5	8.4	11.0	55	13.6	17.5	19.9
South Ck ab Lloyd's Res nr Monticell	MAR-JUL	0.02	0.15	0.31	24	0.52	0.93	1.31
Recapture Ck bl Johnson Ck nr Blandi	MAR-JUL	0.56	1.06	1.40	23	2.88	5.07	6.10
San Juan River nr Bluff	APR-JUL	159	231	280	23	428	647	1230

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.  
Reservoir Storage (1000 AF) - End of March

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.  
Watershed Snowpack Analysis - April 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNTINGTON NORTH	4.2	3.6	4.2	3.9	PRICE RIVER	3	99	62
JOE'S VALLEY	61.6	37.9	43.4	41.4	SAN RAFAEL RIVER	3	98	67
KEN'S LAKE	2.3	1.1	0.7	---	MUDDY CREEK	1	97	57
MILL SITE	16.7	8.4	11.1	---	FREMONT RIVER	3	33	43
SCOFIELD	65.8	30.0	33.2	34.7	LASAL MOUNTAINS	1	52	35
					BLUE MOUNTAINS	1	26	23
					WILLOW CREEK	1	37	34
					CARBON, EMERY, WAYNE, GRA	13	68	54

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

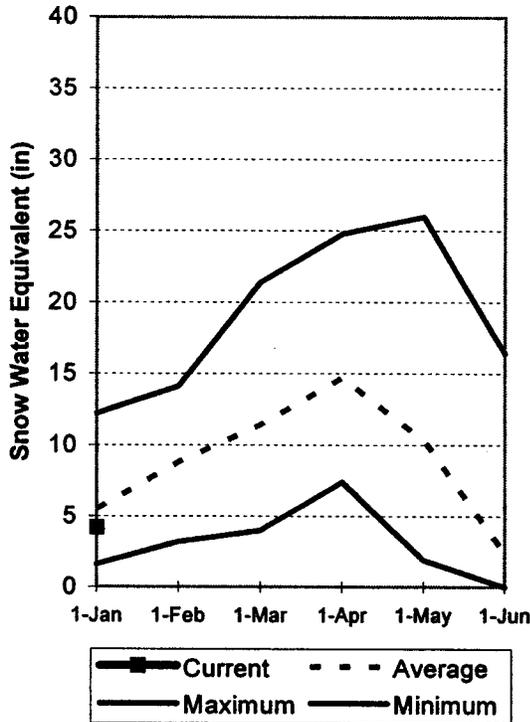
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

## Sevier and Beaver River Basins

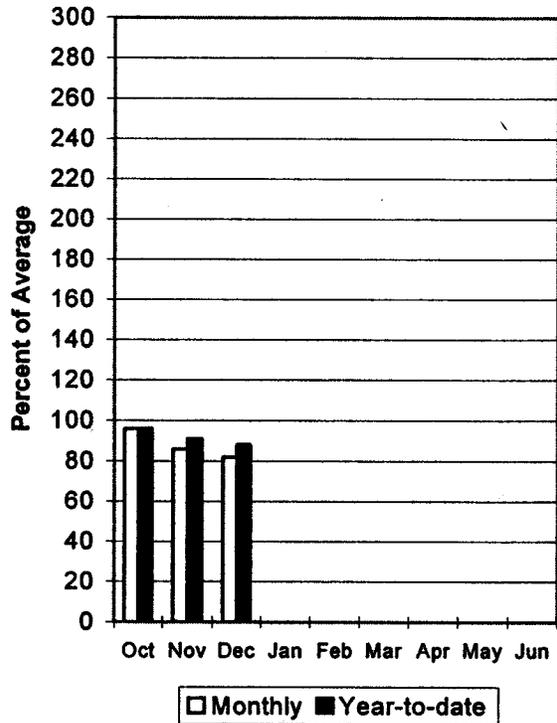
### Jan 1, 2003

Snowpacks on the Sevier River Basin are below normal at 76% of average, about 87% of last year. Individual sites range from 40% to 116% of average. This could be the fifth consecutive below normal April 1 snowpack year for the Sevier. Soil moisture is somewhat improved over last year and may yield a higher runoff efficiency. Precipitation during December was below average at 82% of normal, bringing the seasonal accumulation (Oct-Dec) to 88% of average. Reservoir storage is at 22% of capacity, down 21% from last year. Water supply conditions and streamflow forecasts are below normal due to low snowpack and low reservoir storage.

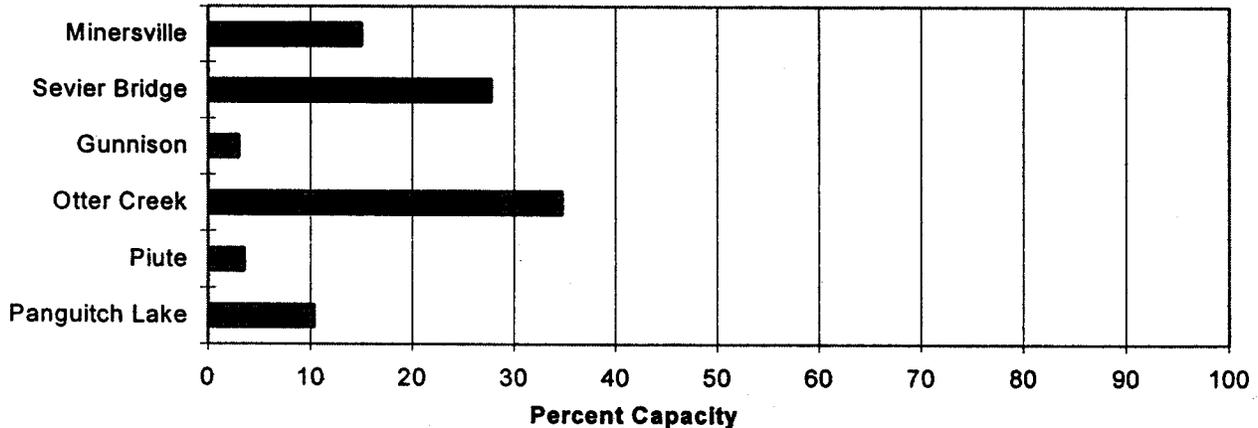
**Mountain Snowpack**  
1/1/2003



**Precipitation**  
1/1/2003



**Reservoir Storage**  
1/1/2003



**SEVIER & BEAVER RIVER BASINS**  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<----- Drier ----->>		----->>		----->>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
SEVIER R at Hatch	APR-JUL	3.8	15.6	22	40	28	40	55
SEVIER R nr Kingston	APR-JUL	5.3	27	33	37	39	61	89
E F SEVIER R nr Kingston	APR-JUL	2.3	4.2	12.0	32	19.8	32	38
SEVIER R blw Piute Dam	APR-JUL	6.0	29	50	40	71	103	126
CLEAR CK nr Sevier	APR-JUL	1.1	7.6	11.0	50	14.4	21	22
SALINA CK at Salina	APR-JUL			Much Below Average				19.7
SEVIER R nr Gunnison	APR-JUL	42	46	120	43	194	350	280
CHICKEN CK nr Levan	APR-JUL	0.67	0.85	1.00	21	1.18	1.50	4.80
OAK CK nr Oak City (Acre Feet)	APR-JUL	342	434	510	28	600	761	1810
BEAVER R nr Beaver	APR-JUL	6.9	8.1	9.0	35	10.0	11.8	26
MINERSVILLE RESERVOIR Inflow	APR-JUL	4.1	4.6	5.0	30	5.4	6.1	16.7

**SEVIER & BEAVER RIVER BASINS**  
Reservoir Storage (1000 AF) - End of March

**SEVIER & BEAVER RIVER BASINS**  
Watershed Snowpack Analysis - April 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GUNNISON	20.3	6.3	13.3	16.3	UPPER SEVIER RIVER (south	8	34	35
MINERSVILLE (RkyFd)	23.3	10.0	11.2	17.9	EAST FORK SEVIER RIVER	3	28	35
OTTER CREEK	52.5	41.8	37.7	43.5	SOUTH FORK SEVIER RIVER	5	40	35
PIUTE	71.8	50.1	68.2	58.5	LOWER SEVIER RIVER (inclu	6	106	65
SEVIER BRIDGE	236.0	134.9	175.7	189.7	BEAVER RIVER	2	58	46
PANGUITCH LAKE	22.3	11.9	14.5	---	SEVIER & BEAVER RIVER BAS	16	60	49

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

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

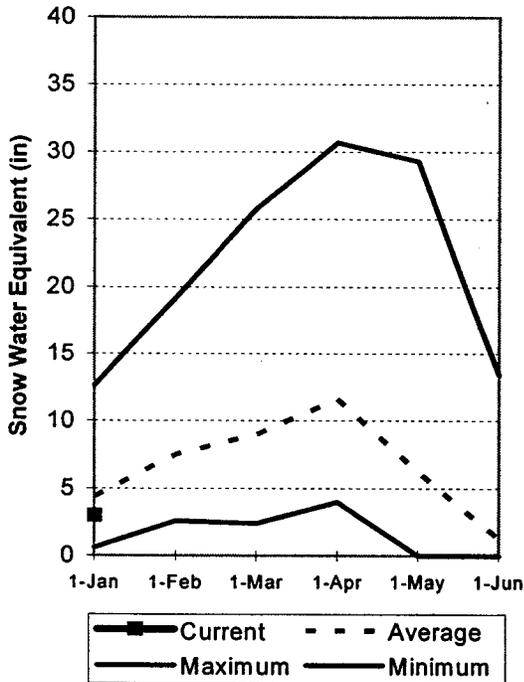
# E. Garfield, Kane, Washington, & Iron co.

Jan 1, 2003

Snowpacks in this region are at 68% of average, about the same as last year. Individual sites range from 36 to 80% of average and it could be the fifth consecutive below normal April 1 snowpack year. Soil moisture is somewhat improved over last year and may yield a higher runoff efficiency. Precipitation was below normal during December at 83% of average, bringing the seasonal accumulation (Oct-Dec) to 89% of normal. Reservoir storage is at 25% of capacity, 31% less than last year. General water supply conditions and streamflow forecasts are below normal.

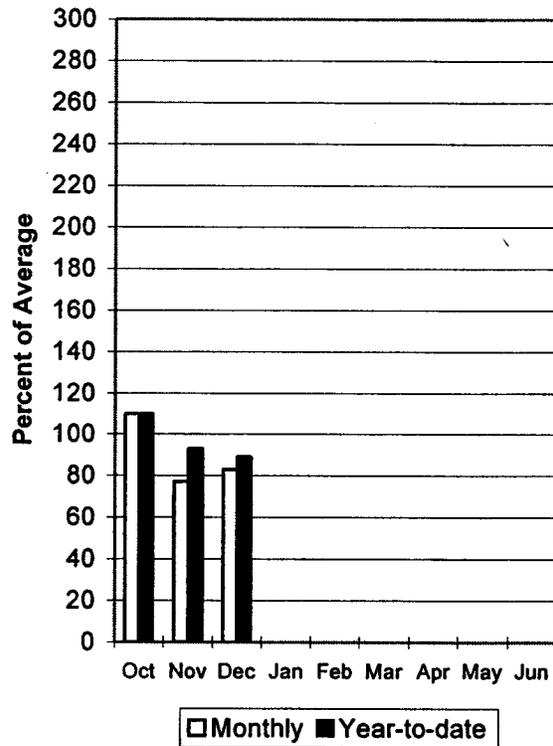
## Mountain Snowpack

1/1/2003



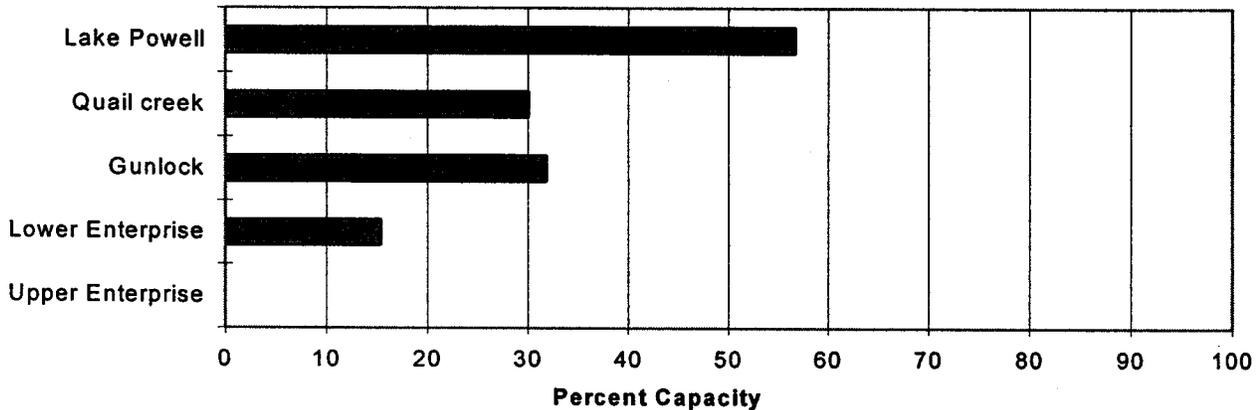
## Precipitation

1/1/2003



## Reservoir Storage

1/1/2003



**E. GARFIELD, KANE, WASHINGTON, & IRON Co.**  
Streamflow Forecasts - April 1, 2002

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<----- Drier ----->>		----->>		----->>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Lake Powell inflow	APR-JUL	487	1983	3000	38	4017	5513	7930
Virgin River nr Virgin	APR-JUL	3.1	7.0	10.4	16	14.5	22	64
Virgin River nr Hurricane	APR-JUL	5.4	6.7	7.6	11	14.5	25	69
Santa Clara River nr Pine Valley	APR-JUL	0.03	0.24	0.51	9	0.87	1.58	5.50
Coal Creek nr Cedar City	APR-JUL	1.7	3.2	4.6	24	6.2	9.0	19.4

**E. GARFIELD, KANE, WASHINGTON, & IRON Co.**  
Reservoir Storage (1000 AF) - End of March

**E. GARFIELD, KANE, WASHINGTON, & IRON Co.**  
Watershed Snowpack Analysis - April 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GUNLOCK	10.4	7.3	10.0	---	VIRGIN RIVER	5	32	24
LAKE POWELL	24322.0	16927.0	18865.0	---	PAROWAN	2	41	38
QUAIL CREEK	40.0	37.7	38.3	31.0	ENTERPRISE TO NEW HARMONY	2	0	0
UPPER ENTERPRISE	10.0	0.5	3.1	---	COAL CREEK	2	32	24
LOWER ENTERPRISE	2.6	0.3	0.8	---	ESCALANTE RIVER	2	22	32
					E. GARFIELD, KANE, WASHIN	9	26	24

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

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

<b>UTAH SURFACE</b>	<b>WATER</b>	<b>SUPPLY</b>	<b>INDEX</b>
<b>Snow Surveys</b>	<b>NRCS</b>	<b>USDA</b>	
<b>Basin or Region</b>	<b>SWSI/%</b>	<b>Percentile</b>	<b>Years with Similar SWSI</b>
<b>Bear River</b>	<b>-4</b>	<b>2%</b>	<b>92,93,2002</b>
<b>Ogden River</b>	<b>-2.9</b>	<b>15%</b>	<b>87,01,81,90</b>
<b>Weber River</b>	<b>-3.5</b>	<b>8%</b>	<b>77,92,88,02</b>
<b>Tooele Valley</b>	<b>NA</b>		
<b>Provo</b>	<b>-3.4</b>	<b>9%</b>	<b>63,60,64,62</b>
<b>North Slope</b>	<b>NA</b>		
<b>West Uintah Basin</b>	<b>0.2</b>	<b>52%</b>	<b>88,95,87,02</b>
<b>East Uintah Basin</b>	<b>-2.2</b>	<b>23%</b>	<b>92,88,90,2000</b>
<b>Price River</b>	<b>-2.2</b>	<b>24%</b>	<b>59,02,89,98</b>
<b>San Rafael</b>	<b>-1.0</b>	<b>38%</b>	<b>95,76,88,99</b>
<b>Moab</b>	<b>-2.4</b>	<b>21%</b>	<b>88,99,81,01</b>
<b>Upper Sevier River</b>	<b>-4</b>	<b>2%</b>	<b>63,61,77</b>
<b>Lower Sevier River</b>	<b>-2.3</b>	<b>22%</b>	<b>67,92,62,65</b>
<b>Beaver River</b>	<b>-3.0</b>	<b>14%</b>	<b>63,90,72,76</b>
<b>Virgin River</b>	<b>-1.7</b>	<b>30%</b>	<b>91,96,85,87</b>
<b>Snow Surveys</b>			<b>SWSI Scale: -4 to 4</b>
<b>245 N Jimmy Doolittle Rd</b>			<b>Percentile: 0 - 100%</b>
<b>Salt Lake City, UT</b>			
<b>(801) 524-5213</b>			

DATA CURRENT AS OF:01/07/03 11:49:55

S N O W C O U R S E D A T A

JANUARY 2003

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
AGUA CANYON SNOTEL	8900	1/01	9	1.4	1.8	2.9
ALTA CENTRAL	8800	1/02	43	10.4	19.0	16.5
BEAVER DAMS SNOTEL	8000	1/01	-	5.0	4.6	4.3
BEAVER DIVIDE SNOTEL	8280	1/01	23	3.8	5.0	4.7
BEN LOMOND PK SNOTEL	8000	1/01	46	12.5	18.3	14.5
BEN LOMOND TR SNOTEL	6000	1/01	36	7.9	11.3	8.5
BEVAN'S CABIN	6450				-	4.2
BIG FLAT SNOTEL	10290	1/01	35	6.8	5.5	7.6
BIRCH CROSSING	8100				-	2.8
BLACK FLAT-U.M. CK S	9400	1/01	21	3.4	4.6	3.8
BLACK'S FORK GS-EF	9340				-	3.3
BLACK'S FORK JUNCTN	8930				-	3.7
BOX CREEK SNOTEL	9800	1/01	26	4.1	6.2	5.3
BRIAN HEAD	10000				-	8.2
BRIGHTON SNOTEL	8750	1/01	32	5.8	9.8	10.9
BRIGHTON CABIN	8700	1/02	36	8.8	14.4	11.5
BROWN DUCK SNOTEL	10600	1/01	-	6.0	6.1	7.7
BRYCE CANYON	8000				-	2.1
BUCK FLAT SNOTEL	9800	1/01	38	7.8	7.3	7.2
BUCK PASTURE	9700				-	-
BUCKBOARD FLAT	9000				-	5.4
BUG LAKE SNOTEL	7950	1/01	31	6.7	8.1	8.3
BURT'S-MILLER RANCH	7900				-	2.2
CAMP JACKSON SNOTEL	8600	1/01	19	3.3	4.8	5.6
CASCADE MOUNTAIN	7770	1/01	25	5.2	-	-
CASTLE VALLEY SNOTEL	9580	1/01	-	3.1	3.5	4.9
CHALK CK #1 SNOTEL	9100	1/01	37	7.2	9.8	10.1
CHALK CK #2 SNOTEL	8200	1/01	29	5.2	6.4	6.7
CHALK CREEK #3	7500				-	3.5
CHEPETA SNOTEL	10300	1/01	-	4.0	5.8	6.0
CLAYTON SPRINGS SNTL	10000	1/01	24	3.4	3.1	-
CLEAR CK RIDG #1 SNT	9200	1/01	34	5.9	6.0	7.7
CLEAR CK RIDG #2 SNT	8000	1/01	-	4.8	4.5	6.0
CORRAL	8200				-	-
CURRANT CREEK SNOTEL	8000	1/01	19	2.1	2.2	4.2
DANIELS-STRAWBERRY S	8000	1/01	29	5.0	5.5	6.5
DILL'S CAMP SNOTEL	9200	1/01	-	5.7	5.1	5.5
DONKEY RESERVOIR SNO	9800	1/01	-	3.2	2.3	4.0
DRY BREAD POND SNTL	8350	1/01	33	6.3	7.4	9.1
DRY FORK SNOTEL	7160	1/01	-	4.2	7.6	6.9
EAST WILLOW CREEK SN	8250	1/01	-	2.0	2.2	2.9
FARMINGTON CN SNOTEL	8000	1/01	50	11.4	15.7	13.0
FARMINGTON CANYON L.	6950				-	10.4
FARNSWORTH LK SNOTEL	9600	1/01	29	5.1	6.5	8.0
FISH LAKE	8700				-	2.9
FIVE POINTS LAKE SNO	10920	1/01	30	5.7	4.8	7.0
G.B.R.C. HEADQUARTER	8700				-	-
G.B.R.C. MEADOWS	10000				-	9.7
GARDEN CITY SUMMIT	7600				-	6.5
GEORGE CREEK	8840				-	-
GOOSEBERRY R.S.	8400				-	5.1
GOOSEBERRY R.S. SNTL	7900	1/01	12	2.7	3.6	3.6
HARDSCRABBLE SNOTEL	7250	1/01	-	5.9	9.4	6.5
HARRIS FLAT SNOTEL	7700	1/01	-	2.0	2.5	2.5
HAYDEN FORK SNOTEL	9100	1/01	32	6.5	6.1	6.3
HENRY'S FORK	10000				-	-
HEWINTA SNOTEL	9500	1/01	22	4.0	3.4	4.1
HICKERSON PARK SNTL	9100	1/01	6	1.1	1.9	2.9
HIDDEN SPRINGS	5500	12/27	7	1.2	4.9	.2
HOBBLE CREEK SUMMIT	7420				-	6.1
HOLE-IN-ROCK SNOTEL	9150	1/01	14	2.3	2.5	2.7
HORSE RIDGE SNOTEL	8260	1/01	-	8.2	8.6	9.3
HUNTINGTON-HORSESHOE	9800				-	9.7
INDIAN CANYON SNOTEL	9100	1/01	22	4.4	3.6	4.4
JOHNSON VALLEY	8850				-	2.7
JONES CORRAL G.S.	9720				-	-
KILFOIL CREEK	7300				-	5.5

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
KILLYON CANYON	6300	12/27	9	1.5	6.8	5.1
KIMBERLY MINE SNOTEL	9300	1/01	-	3.8	4.2	6.0
KING'S CABIN SNOTEL	8730	1/01	20	3.8	3.5	5.0
KLONDIKE NARROWS	7400				-	7.5
KLOB SNOTEL	9250	1/01	23	4.8	5.7	6.9
LAKEFORK #1 SNOTEL	10100	1/01	24	4.4	4.3	5.6
LAKEFORK BASIN SNTL	10900	1/01	34	5.0	5.1	8.2
LAKEFORK MOUNTAIN #3	8400				-	2.8
LAMBS CANYON	7400	1/07	25	5.3	9.5	7.4
LASAL MOUNTAIN LOWER	8800				-	3.8
LASAL MOUNTAIN SNTL	9850	1/01	20	3.4	5.1	4.7
LILY LAKE SNOTEL	9050	1/01	27	4.8	5.1	5.5
LITTLE BEAR LOWER	6000				-	4.3
LITTLE BEAR SNOTEL	6550	1/01	-	3.3	7.1	5.2
LITTLE GRASSY SNOTEL	6100	1/01	-	1.3	2.3	2.1
LONG FLAT SNOTEL	8000	1/01	-	1.0	1.6	2.8
LONG VALLEY JCT. SNT	7500	1/01	-	1.4	2.0	1.8
LOOKOUT PEAK SNOTEL	8200	1/01	-	8.8	12.2	9.9
LOST CREEK RESERVOIR	6130				-	2.0
LOUIS MEADOW SNOTEL	6700	1/01	26	5.5	11.4	-
MAMMOTH-COTTONWD SNT	8800	1/01	33	8.2	7.3	7.6
MERCHANT VALLEY SNTL	8750	1/01	-	3.5	5.3	5.4
MIDDLE CANYON	7000				-	5.9
MIDWAY VALLEY SNOTEL	9800	1/01	33	6.4	5.5	9.0
MILL CREEK	6950	12/27	18	3.6	12.2	8.3
MILL-D NORTH SNOTEL	8960	1/01	-	5.6	13.8	10.3
MILL-D SOUTH FORK	7400	1/02	26	6.0	11.9	8.6
MINING FORK SNOTEL	8000	1/01	26	5.3	9.5	5.5
MONTE CRISTO SNOTEL	8960	1/01	39	7.5	9.4	11.0
MOSBY MTN. SNOTEL	9500	1/01	-	4.7	4.2	5.1
MT. BALDY R.S.	9500				-	9.9
MUD CREEK #2	8600				-	5.3
OAK CREEK	7760				-	-
PANGUITCH LAKE R.S.	8200				-	-
PARLEY'S CANYON SNTL	7500	1/01	-	4.5	8.1	7.2
PARRISH CREEK SNOTEL	7740	1/01	35	7.6	12.7	-
PAYSON R.S. SNOTEL	8050	1/01	22	4.3	8.1	7.2
PICKLE KEG SNOTEL	9600	1/01	-	6.0	7.4	6.2
PINE CREEK SNOTEL	8800	1/01	-	3.5	8.2	8.8
RED PINE RIDGE SNTL	9200	1/01	35	6.0	5.4	6.7
REDDEN MINE LOWER	8500				-	6.7
REES'S FLAT	7300				-	5.6
ROCK CREEK SNOTEL	7900	1/01	-	3.2	3.1	3.7
ROCKY BN-SETTLEMT SN	8900	1/01	31	5.3	9.2	10.0
SEELEY CREEK SNOTEL	10000	1/01	20	4.5	5.5	6.4
SMITH MOREHOUSE SNTL	7600	1/01	22	3.1	6.1	5.7
SNOWBIRD SNOTEL	9700	1/01	44	7.8	15.0	13.2
SPIRIT LAKE	10300				-	5.5
SQUAW SPRINGS	9300				-	3.2
STEEL CREEK PARK SNO	10100	1/01	29	3.9	5.9	6.7
STILLWATER CAMP	8550				-	3.9
STRAWBERRY DIVIDE SN	8400	1/01	-	5.8	8.1	7.4
SUSC RANCH	8200				-	2.8
TALL POLES	8800				-	5.3
TEMPLE FORK SNOTEL	7410	1/01	29	6.8	7.7	-
THAYNES CANYON SNTL	9200	1/01	35	6.6	9.8	9.0
THISTLE FLAT	8500				-	-
TIMBERLINE	9100				-	-
TIMPANOGOS DIVIDE SN	8140	1/01	28	5.4	7.1	9.2
TONY GROVE LK SNOTEL	8400	1/01	51	11.4	15.0	14.3
TONY GROVE R.S.	6250				-	5.0
TRIAL LAKE	9960				-	9.8
TRIAL LAKE SNOTEL	9960	1/01	40	6.2	9.3	10.5
TROUT CREEK SNOTEL	9400	1/01	17	2.3	3.0	4.2
UPPER JOES VALLEY	8900				-	4.1
VERNON CREEK SNOTEL	7500	1/01	16	2.1	4.4	4.0
VIPONT	7670				-	-
WEBSTER FLAT SNOTEL	9200	1/01	-	2.8	3.6	6.0
WHITE RIVER #1 SNTL	8550	1/01	-	4.0	3.4	5.2
WHITE RIVER #3	7400				-	3.5
WIDTSONE #3 SNOTEL	9500	1/01	-	3.9	2.4	4.4
WRIGLEY CREEK	9000				-	4.3
YANKEE RESERVOIR	8700				-	3.7



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