COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
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April 2003

Colorado's water supply improved over much of the state during March due mainly to a single mid-month blizzard that buried the Front Range. The storm caused the South Platte basin to accumulate 204% of the March average precipitation. The Arkansas and Colorado basins benefited as well, with monthly averages better than normal. Unfortunately, the southwestern part of the state missed out on the record snowfall.

The statewide snowpack improved to 94% of average, up from last month's 83% of average. The South Platte, Arkansas, and Colorado basins now have average to slightly above average snowpack levels. The lowest snowpack levels are in the San Juan/Dolores basin (75% of average) and Rio Grande basin (76% of average). The SWSI index numbers correspond similarly to the basin snowpack levels, with the exception of the South Platte basin due to heavy weighting of reservoir storage in that basin. The highest value is in the Colorado basin at +0.7 and the lowest in the San Juan/Dolores basin at –1.8. However, the index numbers show conditions to better than actual conditions. One should keep in mind that the severe drought of the past year has greatly depleted the soil moisture profile. Snowpack heavily influences the index numbers during the winter, but this year's average snowpack (in some basins) will produce much less than average streamflows this coming summer.

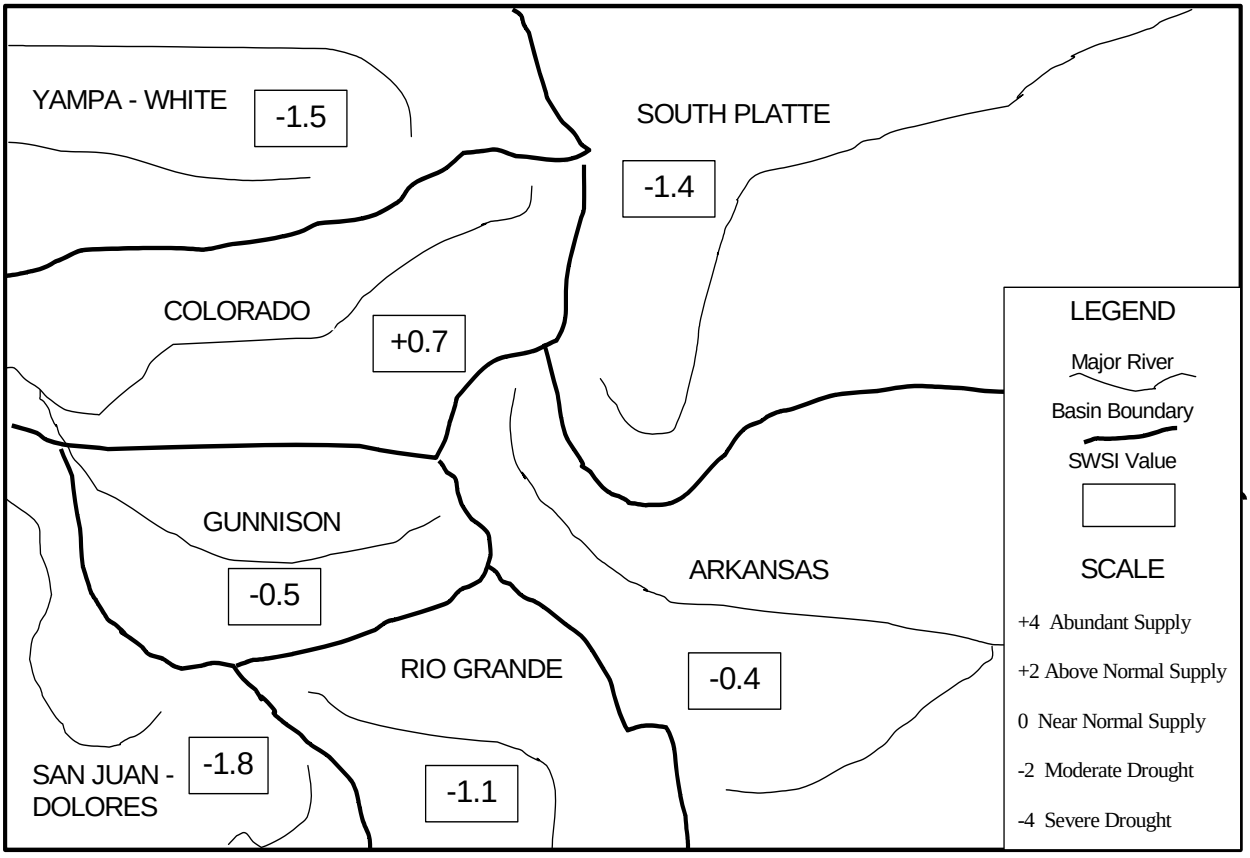
The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on snowpack, reservoir storage, and precipitation for the winter period (November through April). During the winter period, snowpack is the primary component in all basins except the South Platte basin where reservoir storage is given the most weight. The following SWSI values were computed for each of the seven major basins for April 1, 2003, and reflect the conditions during the month of March.

Basin	April 1, 2003 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	-1.4	+1.2	+0.5
Arkansas	-0.4	+1.9	+2.4
Rio Grande	-1.1	-0.1	+2.0
Gunnison	-0.5	+0.9	+2.3
Colorado	+0.7	+1.7	+3.3
Yampa/White	-1.5	+0.3	+2.0
San Juan/Dolores	-1.8	-0.4	+1.7

Scale

-4	-3	-2	-1	0	1	2	3	4
Severe Drought		Moderate Drought		Near Normal Supply		Above Normal Supply		Abundant Supply

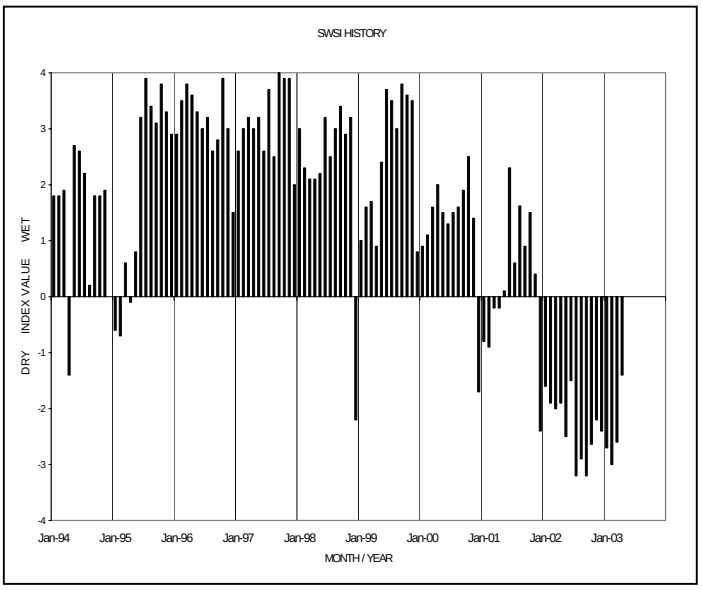
SURFACE WATER SUPPLY INDEX FOR COLORADO



April 1, 2003

Basinwide Conditions Assessment

The SWSI value of –1.4 indicates that for March the basin water supplies were below normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 56% of normal as of the end of March. Cumulative storage in the major plains reservoirs: Julesberg, North Sterling, and Prewitt, is at 61% of capacity. Cumulative storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero is at 44% of capacity. The Natural Resources Conservation Service reports that April 1 snowpack is 114% of normal. Flow at the gaging station South Platte River near Kersey was 760 cfs, as compared to the long-term average of 929 cfs. Flow at the Colorado/Nebraska state line averaged 63 cfs.

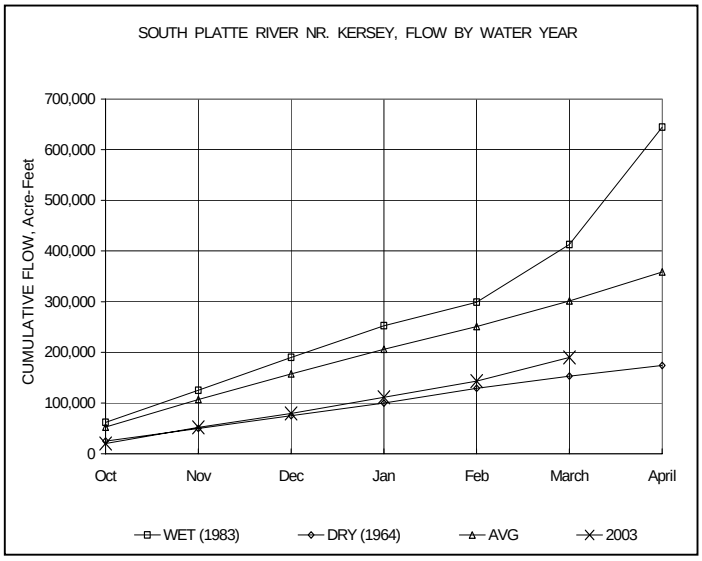


Outlook

The major region wide snowstorm the last part of March significantly improved the snowpack through out the South Platte basin, raising it above average for the first time in several years. The rain and snow also significantly increased soil moisture, delaying irrigation demand two to three weeks. This will keep the direct flow call off the river for at least two weeks into April. Without the snow, we anticipated a direct flow irrigation call on the South Platte the first week of April.

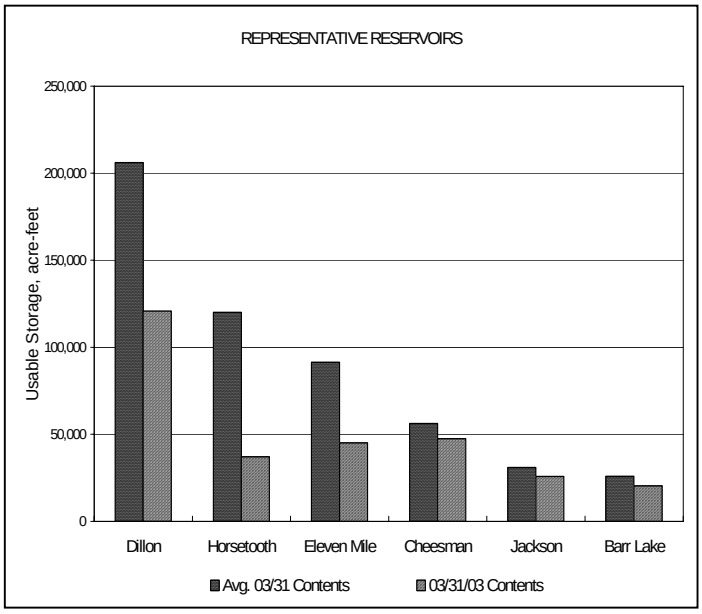
Without a direct flow call and significantly higher flows in the river due to the rain and snowmelt of lower elevation snow, users were also able to significantly increase the amount of water that was put into storage. Users were able to store water in Milton, Prospect, and Horse Creek for the first time this season. In addition, significant amounts of water were stored in Barr Lake, Prewitt and North Sterling.

Even with the additional snow and immediate runoff, we still do not anticipate that many of the named mainstem reservoirs will fill unless there are very wet conditions this spring. Many reservoirs on the tributaries also may not fill even with the higher snowpack. In fact, it is possible to have very high spring runoff and still not fill all of the reservoirs as the reservoirs were so low at the end of last irrigation season and the capacity of the ditches in some cases is not high enough to fill the reservoirs quickly.



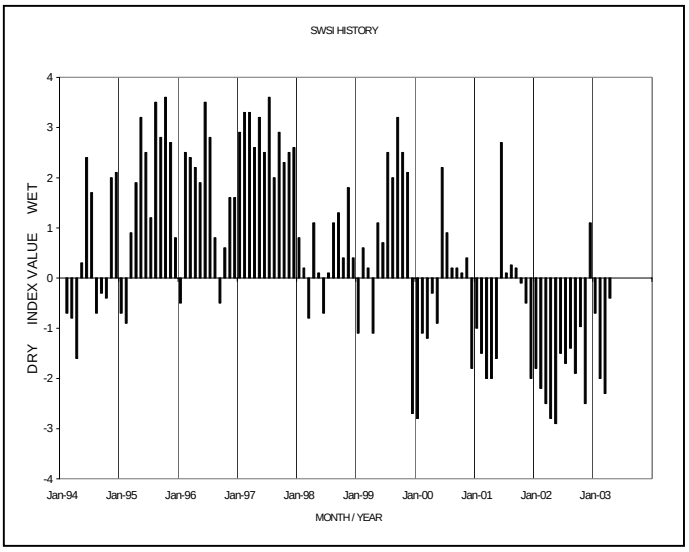
Administrative/Management Concerns

Though not quite as much as previously, there is continued concern for shortages for irrigation and municipal users this summer. Many of the municipal suppliers are now trying to determine what types of restrictions to have this summer in light of the wet conditions the last part of March. It is difficult for them to make these decisions, as so much is dependent on weather conditions the next two months.



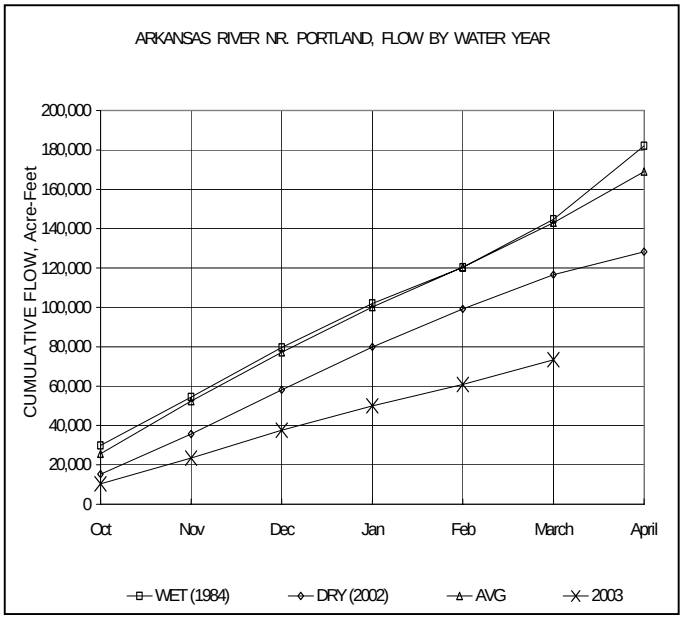
Basinwide Conditions Assessment

The SWSI value of –0.4 indicates that for March the basin water supplies were normal. The Natural Resources Conservation Service reports that April 1 snowpack is 100% of normal. Flow at the gaging station Arkansas River near Portland was 204 cfs, as compared to the long-term average of 367 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 43% of normal as of the end of March.



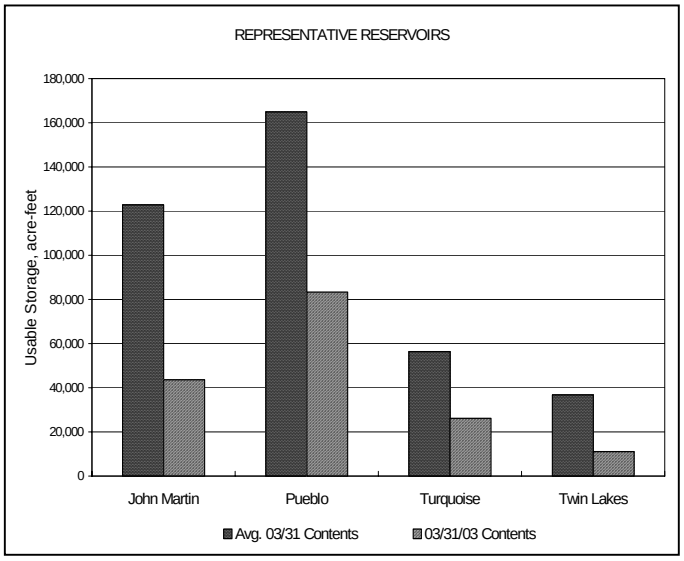
Outlook

Total reservoir storage during the Pueblo Winter Water Program was 74,775 acre-feet, including 31,871 acre-feet in Pueblo Reservoir, 29,432 acre-feet in off-channel reservoirs and canal diversions, and 13,472 acre-feet in John Martin Reservoir (after distribution to accounts). Total Winter Compact Storage in John Martin Reservoir was 12,770 acre-feet for the period from November 1, 2001 through April 6, 2003. Distribution of Winter Compact Storage into accounts began at 08:00 hours on April 7, 2003. Improved snowpack conditions raised some hopes for better supply for surface diversions.



Administrative/Management Concerns

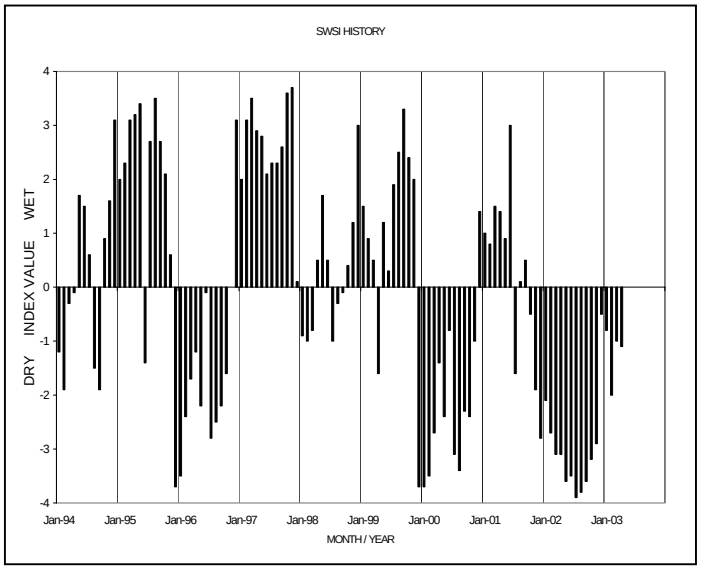
Although streamflow may improve, the availability of replacement water for well augmentation is minimal. Most of the major well associations have augmentation plans for the beginning of the year with zero or minimal approved agricultural well pumping.



Basinwide Conditions Assessment

The SWSI value of –1.1 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 76% of normal. Flow at the gaging station Rio Grande near Del Norte averaged 162 cfs (60% of normal). The Conejos River near Mogote had a mean flow of 54 cfs (69% of normal). Flow at the state line was 38% of normal. Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 86% of normal as of the end of March.

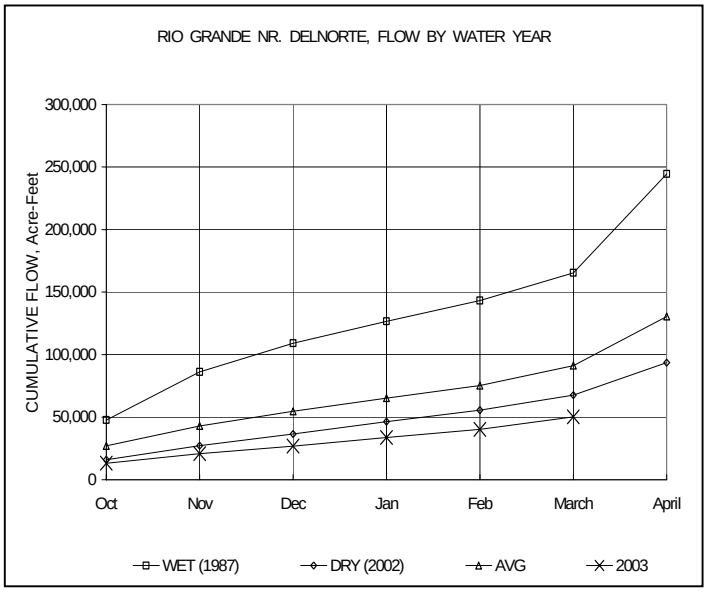
Weather conditions in the San Luis Valley were close to the long-term average for precipitation and temperature during March. A recent study of 10 SNOTEL sites in the upper Rio Grande basin showed the existing snowpack began to decline about April 1. In a normal year, the snowpack would continue to build until April 15.



Outlook

The outlook is better than 2002, but grim for the majority of the upper Rio Grande Basin. Current NRCS streamflow forecasts predict the April through September runoff to be only 54% of average on the Rio Grande near Del Norte and 64% of average for the Conejos near Mogote. Other streams in the basin are forecast as low as 50% of normal for the Alamosa River and as high as 117% of normal for Culebra Creek near San Luis. In general, snowpack at lower elevations within the basin is very poor. The western portion of the basin has some of the poorest snowpack conditions in the entire state. Without significant rainfall during the irrigation season, many of the sub-basins will experience conditions only slightly better than last year's colossal drought.

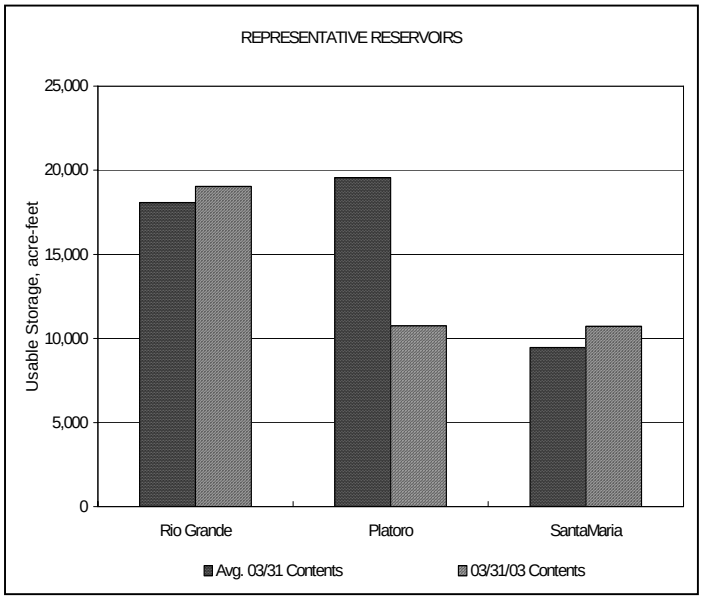
The below normal reservoir storage levels will compound the water availability problem. Soil moisture conditions are poor in most locations around the basin.



Administrative / Management Concerns

Rio Grande Compact accounting for the calendar year 2002 was approved at the Compact meeting held in El Paso, TX in late March. As of January 1, 2003 Colorado has an accrued credit of 42,800 acre-feet in Elephant Butte Reservoir. The total storage in Elephant Butte Reservoir is dangerously low at only 400,000 acre-feet in a 2.3 million acre-foot reservoir.

Based on the current forecast, there will be little or no curtailment of water rights on the Rio Grande and the Conejos River this irrigation season. However, due to the lack of available streamflow, many area ditches will not come into priority this season.



Public Use Impact

Due to the dry conditions and anticipated low runoff, diversions from area streams for irrigation began very early this year.

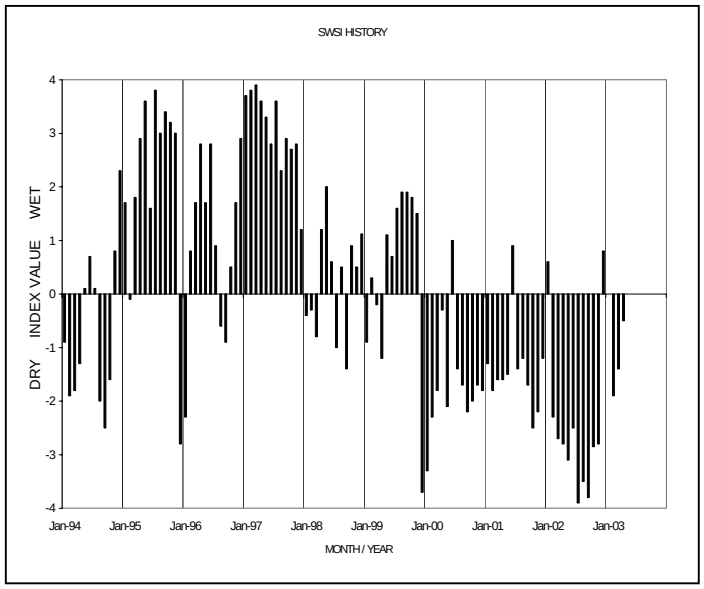
Basinwide Conditions Assessment

The SWSI value of –0.5 indicates that for March the basin water supplies were near normal. The Natural Resources Conservation Service reports that April 1 snowpack is 86% of normal. Flow at the gaging station Uncompahgre River near Ridgway was 54 cfs, as compared to the long-term average of 61 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 63% of normal as of the end of March.

This is a critical time for the basin as many water users are preparing to start diversions for irrigation. The flows are so low that very little water is available for diversion. A good rain event or some warmer weather will increase the water available.

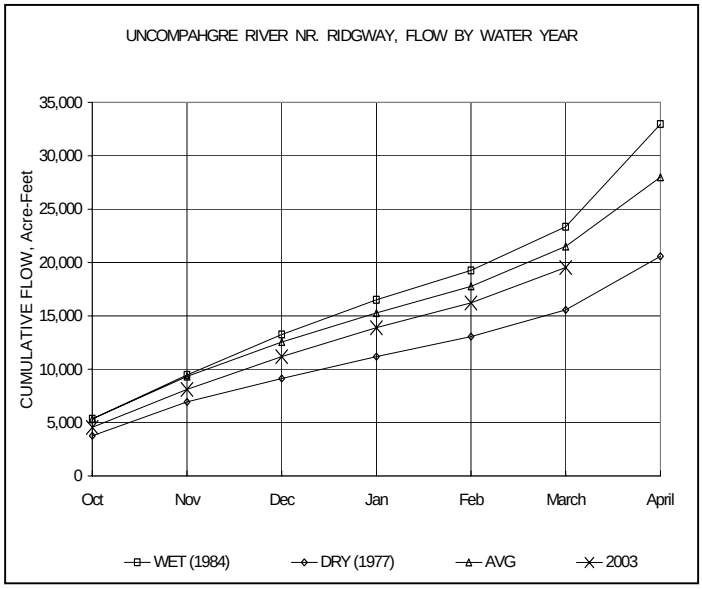
With the low flows, very little is going into storage in the various reservoirs. The major source of storage for the UVWUA, Taylor Park Reservoir, has only about 37% of their first fill completed, and it may not fill this year. It is anticipated that Blue Mesa Reservoir will only fill within 20 ft of the spillway this year.

As for the possible call from Redland Power Canal near Grand Junction, the CRWCD has continued their contract with the company to compensate them for the power revenue losses and keep the river call off. The contract has been continued for April as well.



Outlook

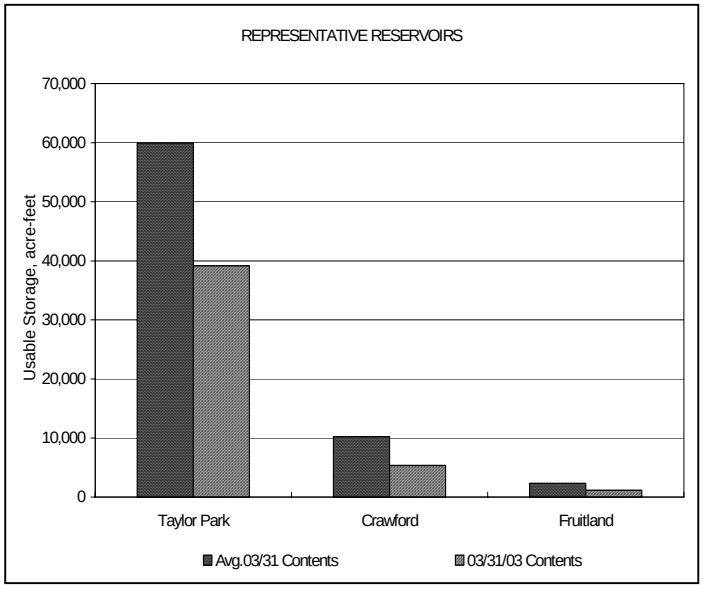
Near normal precipitation in March has increased the snowpack amounts and provided some encouragement to water users in the basin. The base flow levels in the streams are extremely low from the previous years of drought conditions, and it will take a considerable amount of warm weather and runoff to get them back up to a normal amount.



Public use impacts

Many water users are very anxious to get their irrigation started early this year, especially after the drought conditions of last year. In some areas, people only had irrigation water in early April.

Skiers and snowmobilers are commenting how much better the snow is than last year.



Basinwide Conditions Assessment

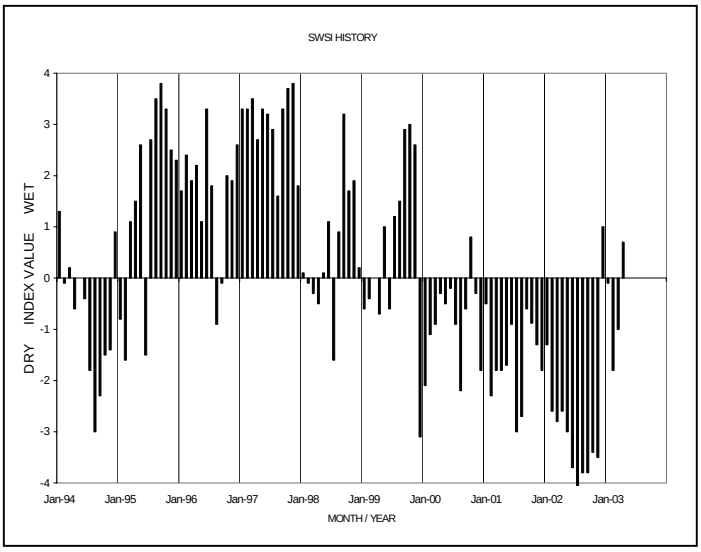
The SWSI value of +0.7 indicates that for March the basin water supplies were normal. Actual conditions, however, are poorer than this index represents due to the previous year's drought and resulting dry soil moisture profile. The Natural Resources Conservation Service reports that April 1 snowpack is 101% of normal. Flow at the gaging station Colorado River near Dotsero was 694 cfs, as compared to the long-term average of 1102 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 50% of normal as of the end of March.

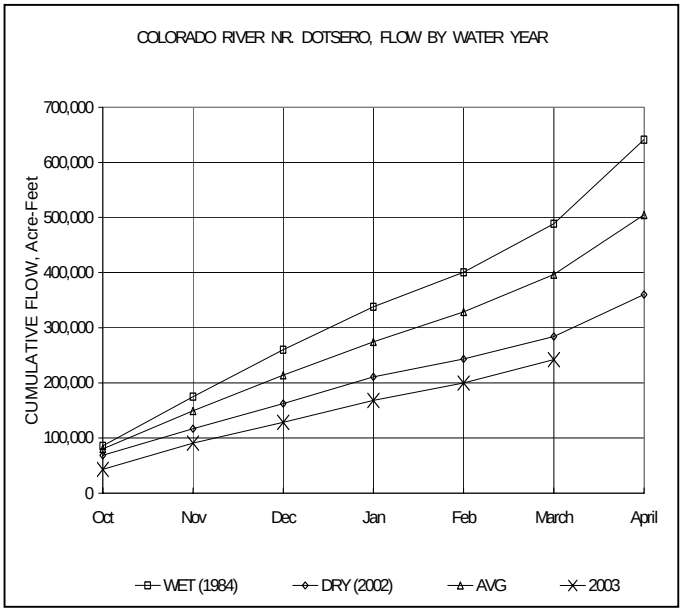
Outlook

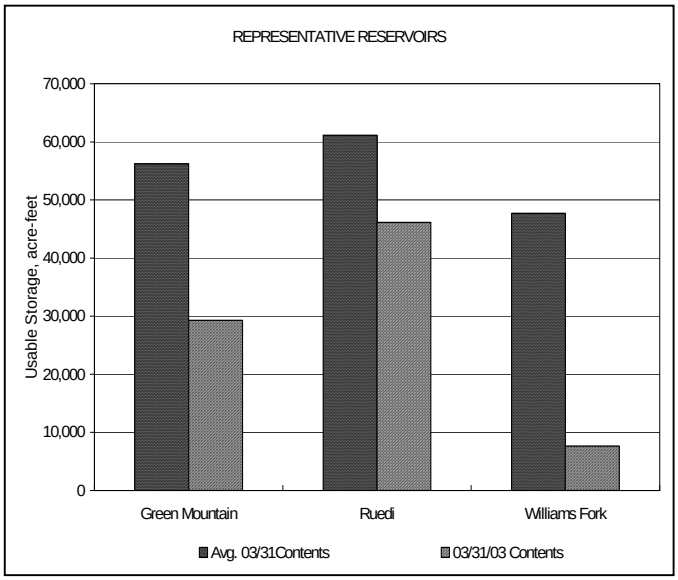
March precipitation was approximately 20% above average for the entire Colorado River basin, bringing snowpack up to average conditions by April 1, the first time that has occurred in 4 years. Streamflow forecasts (April-July volumes) improved during March to 90% of average basin-wide. The Blue River and Willow Creek (near Granby) basins have forecasts of over 100% of average runoff while the Roaring Fork River and Plateau Creek basins are still significantly below average at 77% and 65% of average, respectively.

Administrative/Management Concerns

On March 14 the Shoshone Power Plant, owned by Public Service Company, relaxed their senior call from 1250 cfs to 700 cfs. Major water users worked out an historic agreement to temporarily reduce this call to allow upstream reservoirs such as Dillon, Granby, and Green Mountain to increase their depleted storage volumes while paying PSCO for the lost power generation revenues. The large irrigation canals in the Grand Valley are expected to call for water by mid-April, which may lead to some curtailments until spring runoff has developed.





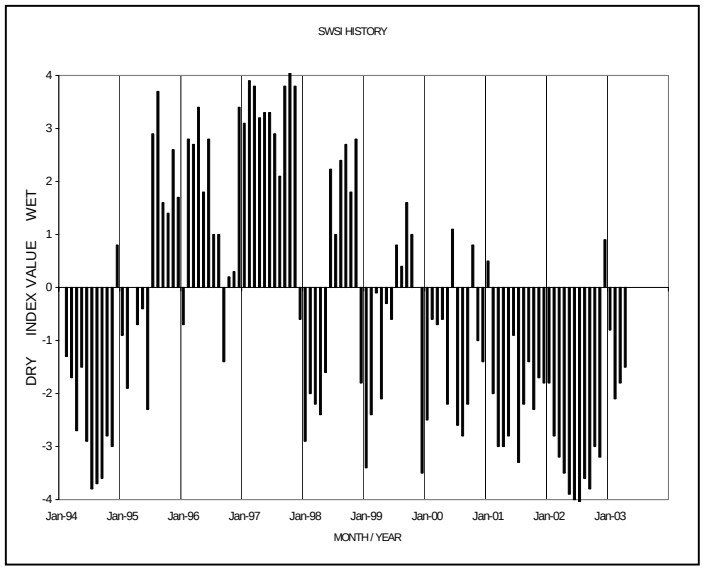


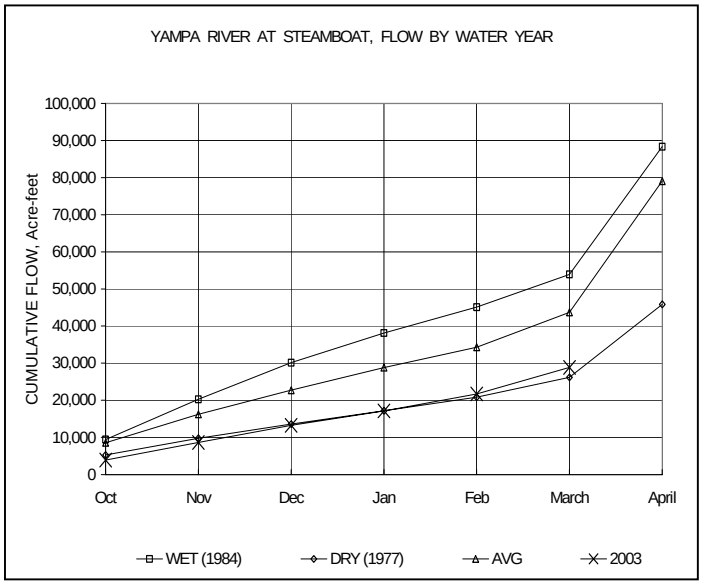
Basinwide Conditions Assessment

The SWSI value of –1.5 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 91% of normal. Flow at the gaging station Yampa River at Steamboat was 116 cfs, as compared to the long-term average of 153 cfs.

March continued to bring much needed moisture to the basin. Basin-wide, precipitation was 105% of average for the month and 147% of March last year. This was the second month in a row that precipitation has been above average. At the end of March the snowpack for the North Platte River Basin was 98% of average; for the Yampa River Basin 95% of average; for the White River Basin 85% of average; and for the Little Snake River 96% of average. The largest increases in snowpack were on the North Platte and Little Snake River drainage, a result of the blizzard that buried the Front Range in late March. That storm brought little snow to the White and Yampa River drainages, but the averages for these basins did increase slightly for the month. The April 1 streamflow forecasts reported by the Natural Resources Conservation Service are 74% of average for the North Platte near Northgate, 83% of average for the Yampa River near Maybell, 79% of average on the Little Snake near Dixon, and 62% for the White River near Meeker. The forecast runoff predictions for this month, as compared to last month, are slightly higher for the Yampa and Little Snake Rivers, significantly higher for the North Platte, and decreased by 4% for the White River.

Warm temperatures in the middle of the month caused considerable melting of snow cover at the lower elevations. This runoff resulted in streamflows reaching, or exceeding, the average flow rates for this time of year. As cooler weather returned to the basins, flows dropped off and were again well below average by the end of March.





Outlook:

Weather patterns appear to be moving storms across the region on a regular basis. If this pattern continues and spring precipitation is near normal, the runoff season should see much better conditions than last year.

Administrative/Management Concerns:

Walden Reservoir placed a call on the Illinois River, a tributary to the North Platte, on March 11th. An early spring with warm temperatures could result in steams and rivers going under administration early, until the runoff provides sufficient flows to satisfy demand.

Public Use Impacts:

Recreation is slowly shifting from winter to spring activities. The ski hill in Steamboat is scheduled to close mid-April. Fishing on the Yampa has started to increase with the warmer temperatures and higher flows. This activity should continue until the runoff increases.

Basinwide Conditions Assessment

The SWSI value of –1.8 indicates that for March the basin water supplies were below normal. The Natural Resources Conservation Service reports that April 1 snowpack is 75% of normal. Flow at the gaging station Animas River near Durango was 208 cfs, as compared to the long-term average of 304 cfs. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 62% of normal as of the end of March.

In Southwest Colorado, March was fairly dry. A large storm which came through the area on March 16 & 17, provided most of the precipitation for the month. In Durango 1.38 inches of snow and rain was recorded, which was 74% of normal leaving the average since October 1, 2002 at 94% of normal precipitation.

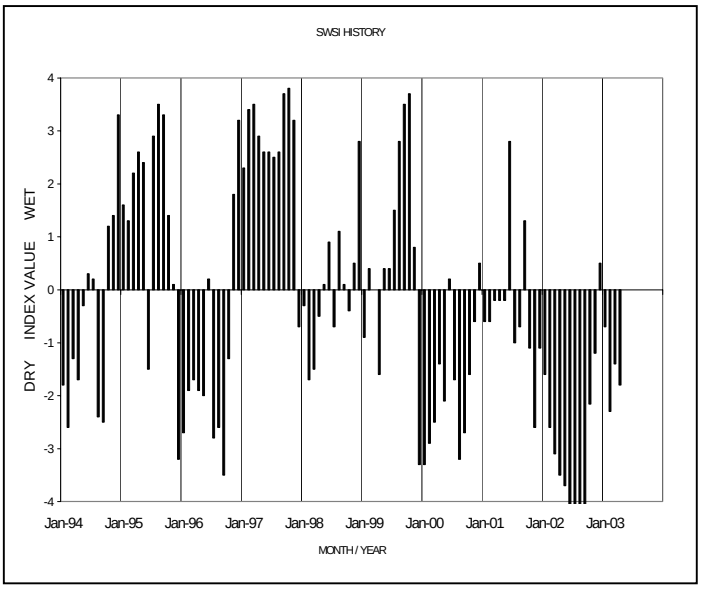
Temperatures were warmer than normal for the lows and about normal for the highs in the area. Wind blew regularly but not as much as was experienced a year ago.

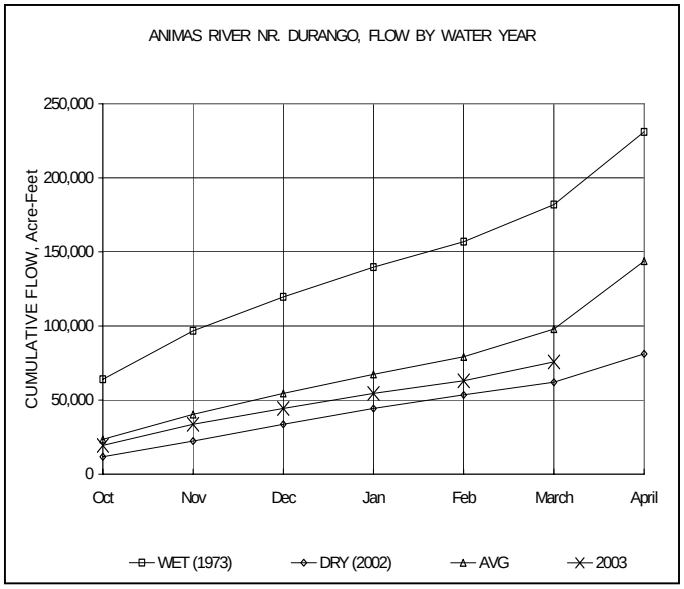
River flows did not rise significantly until the end of the month and remained well below average throughout the month at about 60% on the average. The Dolores River reached 139 cfs on March 24 and the Animas River at Durango reached 303 cfs on March 27.

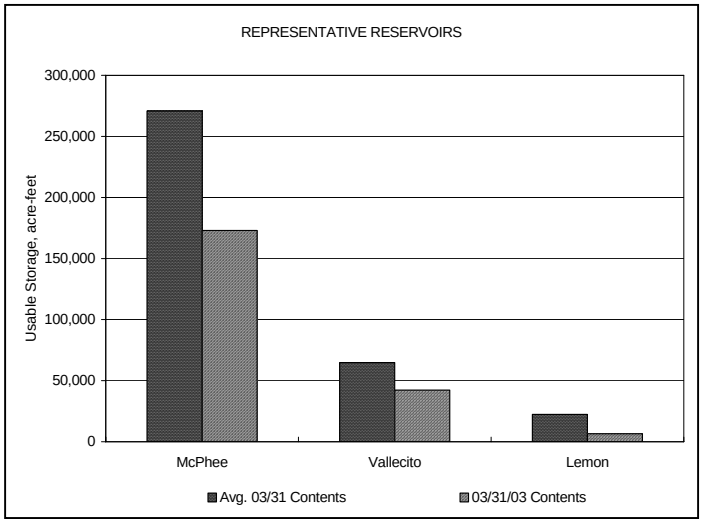
Reservoir carryover is very poor especially at McPhee and Lemon Reservoir. Red Mesa Ward Reservoir and the Pagosa Area reservoirs managed to secure significant fills during the winter. Others will rely on a warm spell early in the spring to capture water for the later season.

The best snowpack recordings were found up the Dolores and in the La Platas. Snowpack was very poor (50% - 60% of normal) in the East San Juans, including Wolf Creek Pass.

Additional precipitation in April would be very welcome for those who rely on water supplies to use in the summer months.







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