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# COLORADO

## WATER SUPPLY CONDITIONS UPDATE

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FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES  
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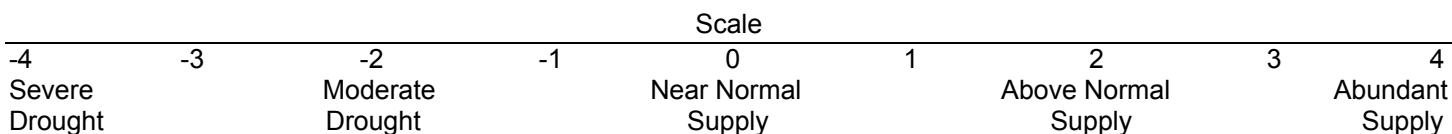
September 2002

Drought conditions continue statewide, as shown by the SWSI numbers. Conditions in the Arkansas River basin are worse than the SWSI value indicates. Scattered precipitation did occur during August providing limited moisture to a few areas in the state. Generally temperatures were warm during August. Streams continue to flow at record low levels, some being completely dry in spots. Many reservoirs, especially those used for irrigation, are empty. Statewide, average reservoir content is approximately 49% of normal.

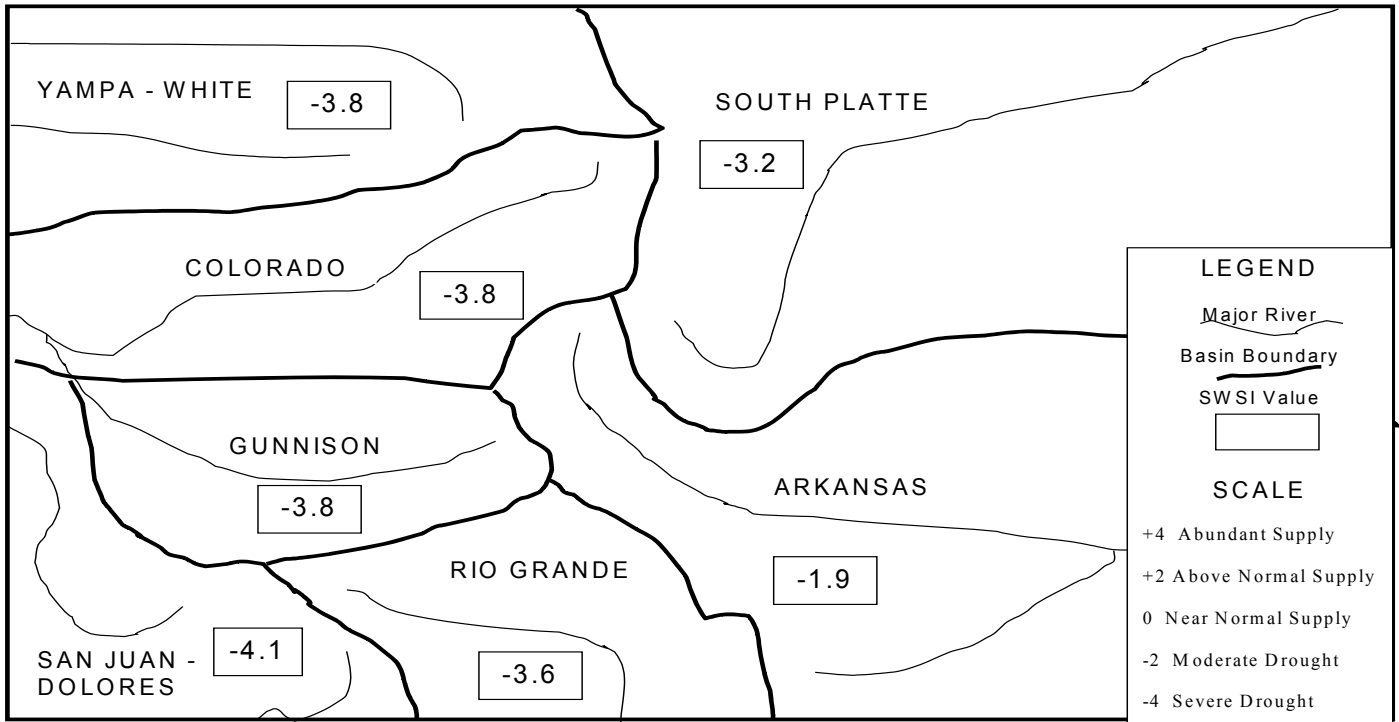
Only the most senior water right holders are able to divert. Soil moisture and shallower ground water aquifers are being adversely affected. Many diverters relying on augmentation plans are being adversely affected because their sources of replacement water are drying up. While late summer and fall can be wet in southwest Colorado, with the climate in most of Colorado being dry in the autumn we will have to wait to see whether the winter snows and spring precipitation events bring an end to the drought.

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 stream flow, reservoir storage, and precipitation for the summer period (May through October). During the summer period, stream flow 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 September 1, 2002, and reflect the conditions during the month of August.

<u>Basin</u>	<u>September 1, 2002 SWSI Value</u>	<u>Change From Previous Month</u>	<u>Change From Previous Year</u>
South Platte	-3.2	-0.3	-4.1
Arkansas	-1.9	-0.5	-2.1
Rio Grande	-3.6	+0.2	-4.1
Gunnison	-3.8	-0.3	-2.1
Colorado	-3.8	-0-	-3.2
Yampa/White	-3.8	-0.2	-2.4
San Juan/Dolores	-4.1	-0-	-5.4



# SURFACE WATER SUPPLY INDEX FOR COLORADO



SEPTEMBER 1, 2002

Basinwide Conditions Assessment

The SWSI value of -3.2 indicates that for August the basin water supplies were well below normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 55% of normal as of the end of August. Cumulative storage in the major plains reservoirs: Julesberg, North Sterling, and Prewitt, is at 10% of capacity. Cumulative storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero is at 57% of capacity. Flow at the gaging station South Platte River near Kersey was 92 cfs, as compared to the long-term average of 844 cfs. Flow at the Colorado/Nebraska state line averaged 18 cfs.

River calls continue to be very senior though out the basin. The Farmers Independent 11-22-1865 call on the South Platte above the mouth of the Saint Vrain is the most senior call in approximately 35 years on this portion of the river. The 10-26-1881 Weldon Valley bypass to the Sterling No. 1 call further east on the Platte is the most senior call in this portion of the river in over 20 years.

Major plains reservoirs including Jackson, Riverside, Empire, and Julesburg are empty except for dead storage. North Sterling Reservoir will be empty the first part of September. Prewitt will be down to dead storage before the end of September. Operators of some of these reservoirs have looked at possible dredging as a way of being able to release additional water in isolated pockets of the reservoirs.

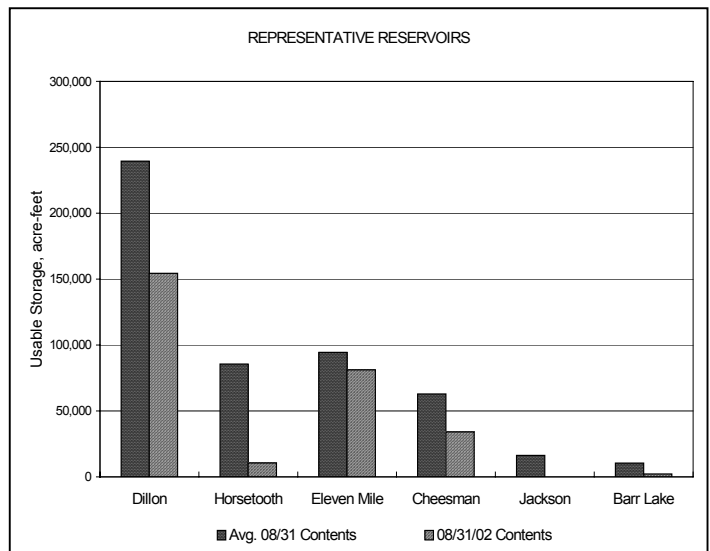
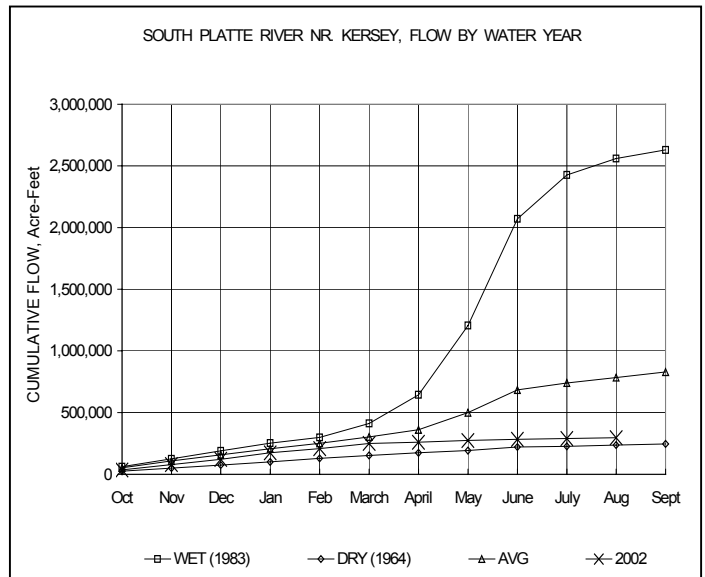
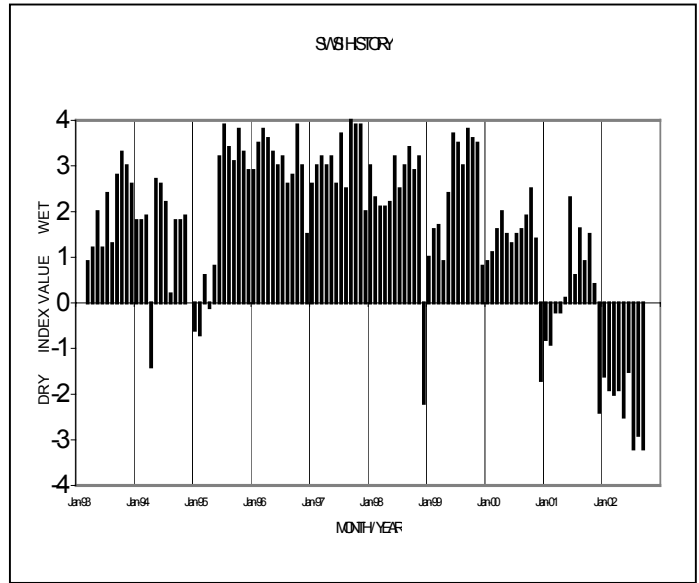
Denver drained Antero Reservoir into Cheesman Reservoir during August to reduce evaporation losses, be better able to provide a mix of in-basin and transbasin supplies, and for water quality purposes. Rains that fall on the Hayman burn area can bring down ash and debris that will foul the water supply in Cheesman. By putting the water in Cheesman, Denver Water hopes to dilute the amount of ash in the raw water supply. Denver presently plans to lower Eleven Mile for the same reasons from its present storage of 88,000 to approximately 40,000 by next spring.

Outlook

Unless conditions change, it is likely there will be very little new recharge this fall. In addition, we question whether major plains reservoirs will fill. Thus, we will have to assure that junior storage users understand that they may have to release any water stored out of priority. In addition, well augmentation organizations such as Central, GASP, LSPWCD, Bijou, and Fort Morgan may have to pay for any winter time depletions if plains reservoirs don't fill. If reservoirs don't fill and we don't get significant recharge, there will probably be well owners who do not have adequate replacement water next year and who will not pump next irrigation season.

Administrative/Management Concerns

Well augmentation organizations have had to acquire additional supplies and work together utilizing their combined resources to maximize the water available for replacement sources. There is still concern in some areas whether there will be adequate replacement water for the remainder of the irrigation season.



Basinwide Conditions Assessment

The SWSI value of -1.9 indicates that for August the basin water supplies were below normal. Conditions are actually worse than this number indicates. Flow at the gaging station Arkansas River near Portland was 143 cfs, as compared to the long-term average of 1,014 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 48% of normal as of the end of August.

Outlook

Reservoir storage levels dropped during August. Pueblo Reservoir has fallen approximately 25 feet since the end of the last winter water storage program (March 15, 2002). John Martin reservoir has dropped nearly 18 feet since April. Trinidad Reservoir's largest water holder is the permanent fishery pool accounting for approximately 96% of its content.

The mainstem river call has primarily been between 1869 and 1874 with a brief period at 1884.

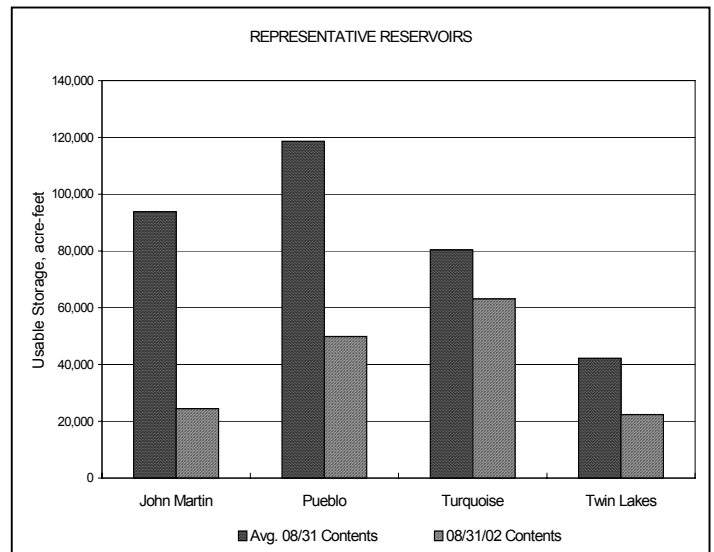
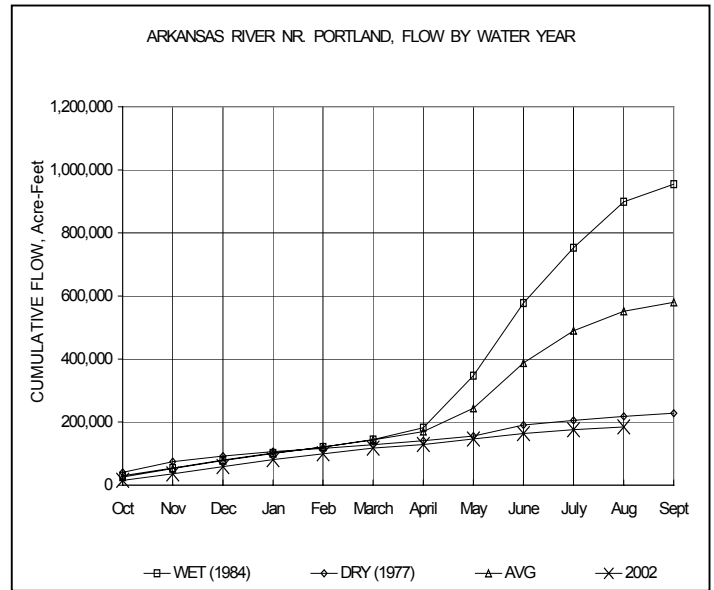
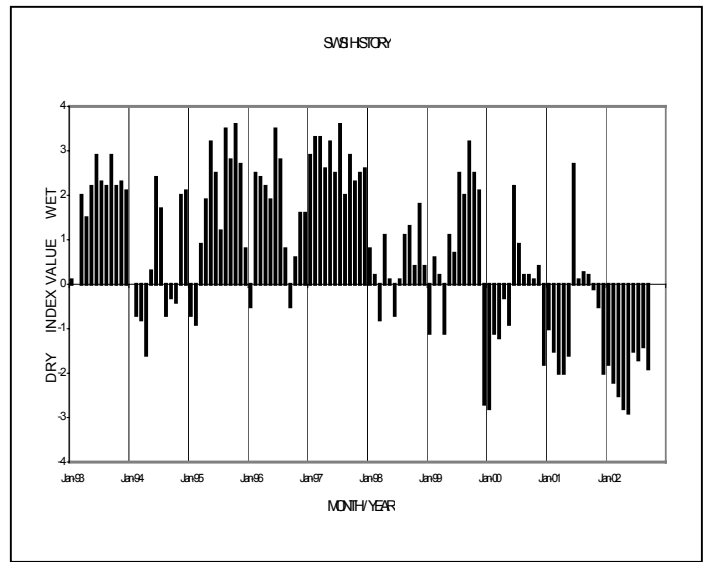
Administrative/Management Concerns

The Winter Water Board of Trustees will meet in La Junta on September 13<sup>th</sup> to discuss the upcoming season.

Public Use Impacts

Generally, all municipalities are on voluntary water restrictions, most are at a stage II restriction and some are at a stage III level.

Cooperation among water users has been taken to new levels. The loss of exchange opportunities for some municipalities has been the saving grace for water augmentation groups in the Valley. Up-stream senior diverters have re-evaluated their needs to make sure they are only taking the very minimum and leaving a portion of their vested water right in the river. Low reservoir levels have allowed for new area-capacity surveys and low stream flows have provided for clean up of riverbanks and channels.



Basinwide Conditions Assessment

The SWSI value of -3.6 indicates that for August the basin water supplies were severely below normal. Flow at the gaging station Rio Grande near Del Norte was 117 cfs (15 % of normal), as compared to the long-term average of 719 cfs. The Conejos River near Mogote had a mean flow of 17 cfs (8% of normal). Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 78% of normal as of the end of August.

All streams in the upper Rio Grande basin are currently at severely low levels.

The San Luis Valley continues to be abnormally warm and dry. While Alamosa and the surrounding valley floor typically receive a paltry 7.5 inches of precipitation annually, only 2.7 inches have fallen in the past 12 months.

Although mild compared to other regions in Colorado, the daily high temperature in the Valley has soared to 90° or above 10 days this summer. With the exception of 1989, this type of heat wave has not occurred in the San Luis Valley in the past 50 years. Erratic weather? How about both the record high (87°) and low (30°) temperatures for that date set in Alamosa on August 25<sup>th</sup>.

Outlook

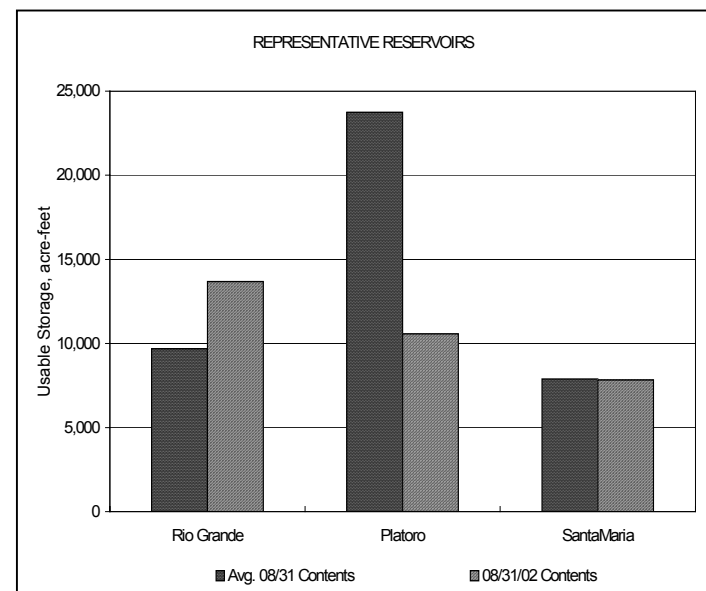
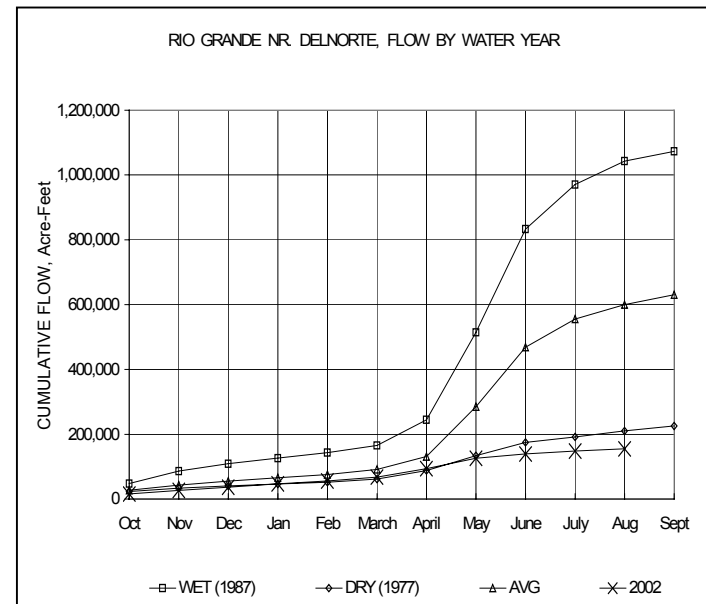
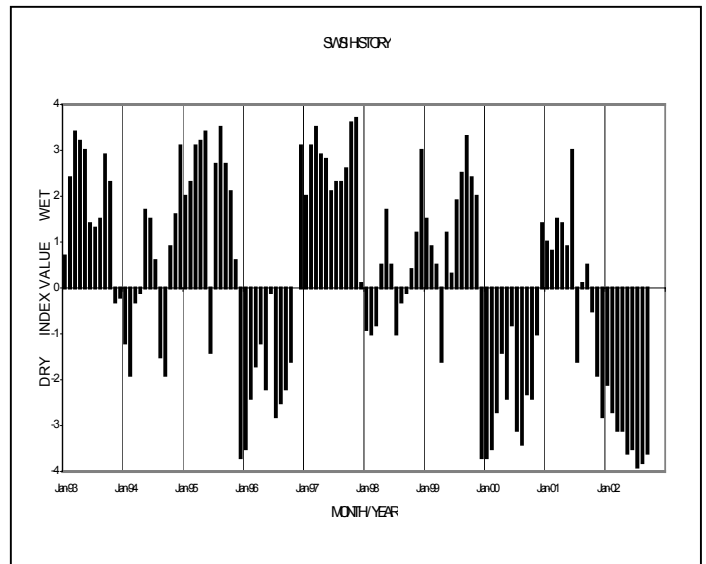
Administrators and water users are bracing themselves for persistent hot and dry weather and poor stream flow conditions. The call for water from area creeks and rivers should remain very senior until winter. The aquifers of the region will continue to be stressed as nearly all irrigation water used in the area must come from wells.

A glimmer of hope: in early September light snowfall adorned the peaks of the Sangre de Cristo peaks.

Administrative/Management Concerns

The unprecedented poor conditions bordered on the edge of ridiculous as August drew to a close:

- Smith, Mountain Home and Homelake Reservoirs are empty. The expected low winter runoff will prevent most reservoirs in the basin from gaining much water during the winter storage season. Platoro Reservoir will likely lose storage as mitigated outflow will exceed the minimal inflow.
- On the Conejos and Alamosa Rivers, even the No. 1 irrigation priority could not be served. The dry streambed ate up any native flow in the channel, creating a futile call to even the oldest water right in that drainage.
- The Rio Grande from Wagon Wheel Gap to Monte Vista is normally a gaining reach. However, in the past few weeks, the river lost approximately 40 cfs between these points.
- The flow in the Conejos near Mogote dropped to 10 cfs on August 19<sup>th</sup>.
- Applications received for replacements of domestic and stock wells are three to four times the normal level. Well drillers in the Valley are now booked solid through October.



Basinwide Conditions Assessment

The SWSI value of -3.8 indicates that for August the basin water supplies were severely below normal. Flow at the gaging station Uncompahgre River near Ridgway was 47.6 cfs, as compared to the long-term average of 171 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 50% of normal as of the end of August.

The water supply during August in the Gunnison and San Miguel Basins remained drier than normal. Although some areas actually reported above-average precipitation for the month, this was more than offset by the continued lowering of area reservoirs. Blue Mesa Reservoir dropped another ten vertical feet, or 55,000 acre-feet of storage, in August.

The monsoonal weather flows typically experienced during August were brief and highly variable. The monthly precipitation ranged from 0.56 inches at Hotchkiss to 2.87 inches at Norwood. On the 5<sup>th</sup>, rain near Norwood produced mudflows across State Highway 141 in the vicinity of the recent Burn Canyon Fire. On the 29<sup>th</sup>, mudslides crossed Highway 550 on Red Mountain Pass and four inches of snow fell on Telluride Ski Resort.

Through the first 11 months of the water year, many communities in the Gunnison and San Miguel Basins had only received roughly half of their annual average precipitation.

Though several record high temperatures were set in August, the cooler showery periods kept the average monthly high temperatures only slightly above normal.

Administrative/Management Concerns

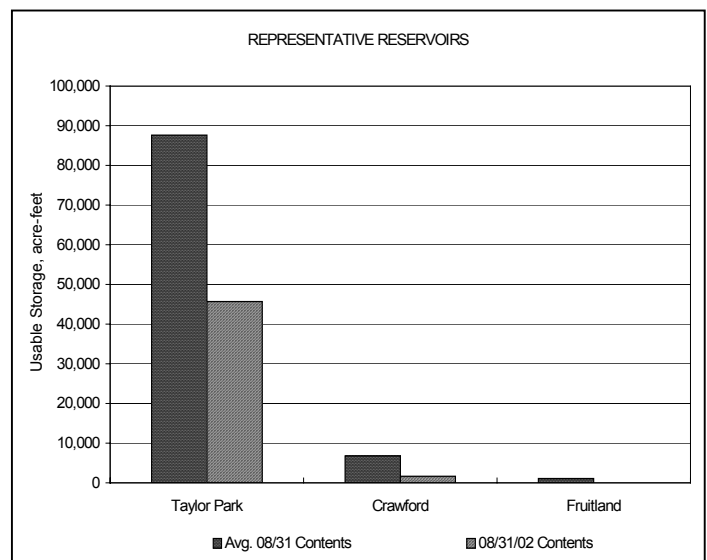
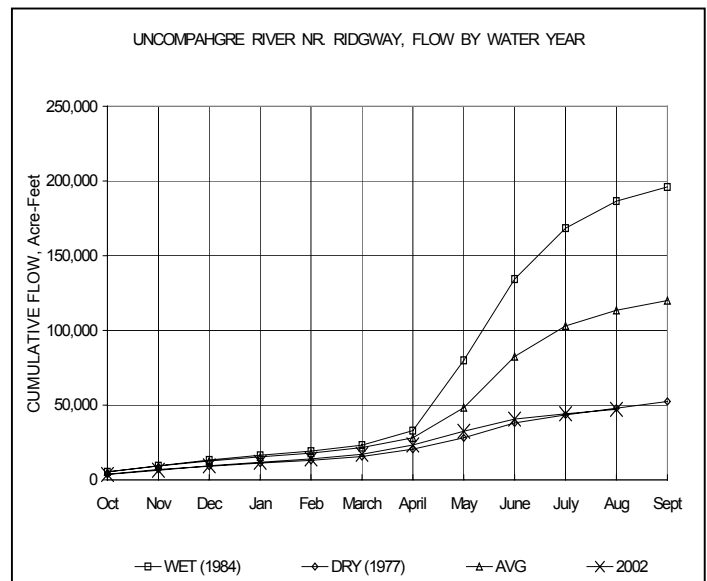
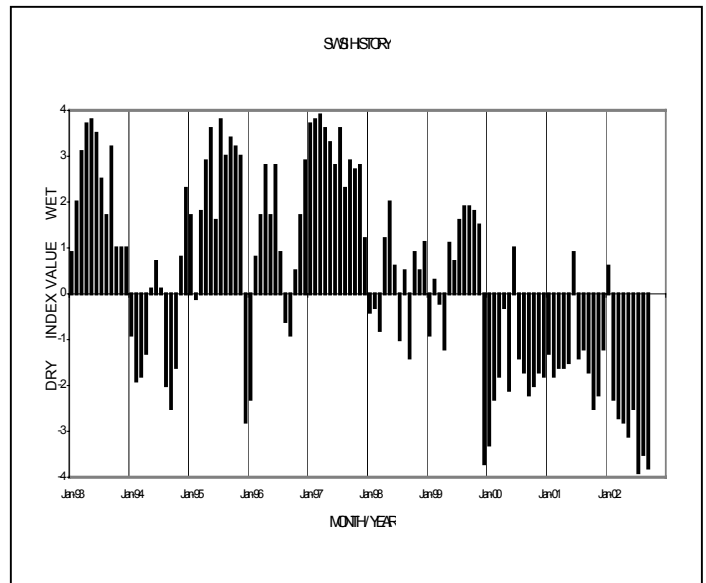
Shortages occurred in the San Miguel drainage and municipal water was in short supply. The local Water Commissioner told the Town of Naturita on three occasions that if it didn't rain that day, he'd have to curtail their water. Fortunately, it rained all three times they faced curtailment.

The East River was another basin experiencing severe shortages. Irrigation demands for fall pasture were threatening to call out several subdivisions and hundreds of homes in the Crested Butte area. A temporary source of augmentation water was secured to protect against the call.

Public Use Impacts

Recreational users in the forests continued to be affected by the banning of campfires. The shortened rafting season was another impact on the recreational and tourism industries.

Several streams were at dangerously low levels for sustaining trout fisheries. The minimal flows in the East River made it particularly difficult for the kokanee salmon migration from Blue Mesa Reservoir to the Roaring Judy Fish Hatchery.



Basinwide Conditions Assessment

The SWSI value of -3.8 indicates that for August the basin water supplies were severely below normal. Flow at the gaging station Colorado River near Dotsero was 920 cfs, as compared to the long-term average of 1,848 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 41% of normal as of the end of August.

Monsoon rain patterns continued throughout August, which is typically the wettest month in much of the Colorado River Basin. Some areas such as Grand Junction reported above average precipitation for the month, but other parts of the basin, such as Meredith and Glenwood Springs, were well below average. August temperatures were only slightly above normal.

Outlook

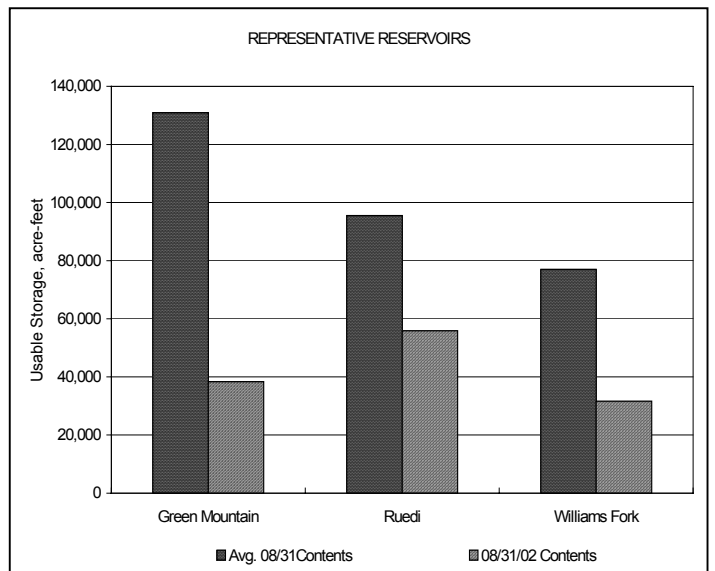
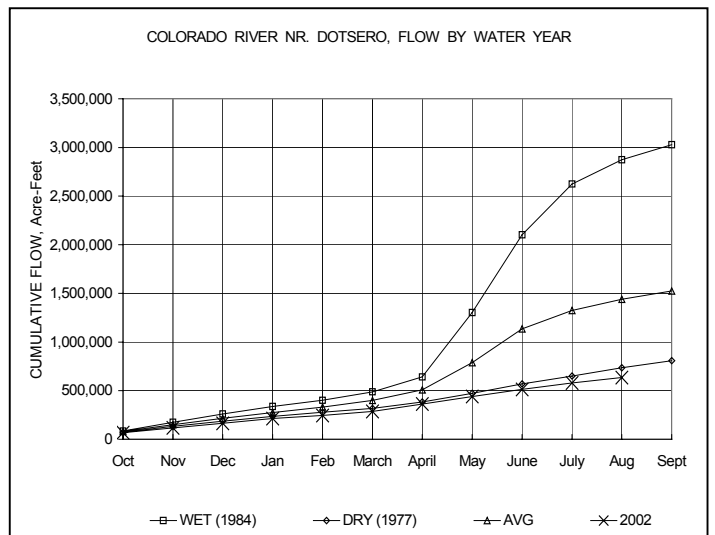
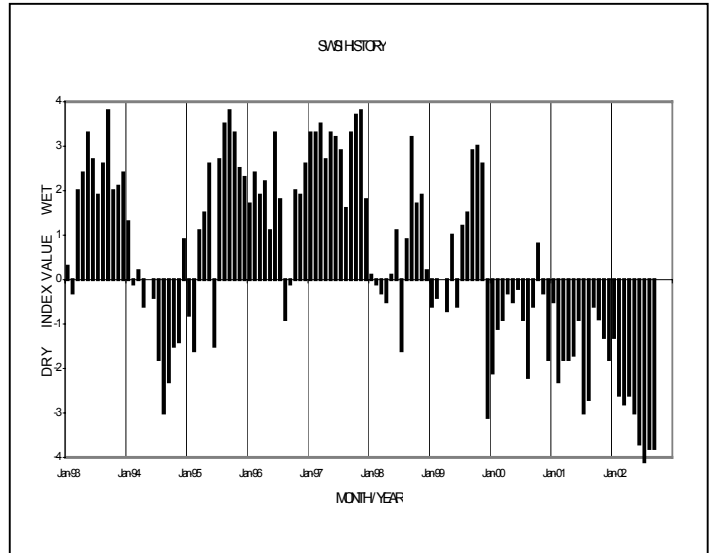
August's weather pattern is expected to continue through September.

Administrative/Management Concerns

August rains have helped hold stream flows up in parts of the basin, but many streams remain below historic low flows. In stream flow water rights are not being satisfied on numerous streams, and the CWCB has asked that administration be enforced for these rights.

Public Use Impacts

While fire danger has diminished in some parts of the basin, new fires caused by lightning did spring up in August. Heavy rains caused mudflows and damage in Rifle and along Mitchell Creek. The rains came too late for many ranchers, who will produce far below average hay crops this year.



Basinwide Conditions Assessment

The SWSI value of -3.8 indicates that for August the basin water supplies were severely below normal. Flow at the gaging station Yampa River at Steamboat was 46.6 cfs, as compared to the long-term average of 159 cfs.

Precipitation for August was 56% of average for the basin as measured at the NRCS Snotel sites. Some areas actually recorded above average precipitation for the month, but the rainfall was widely scattered with wide variations in amounts. Stream flows were extremely low throughout the month. The Yampa River near Maybell saw flows of less than 4 cfs, while the gage near Craig reached zero flow for short durations. Most irrigation reservoirs have stopped releases for irrigation and are at minimum storage levels.

Outlook

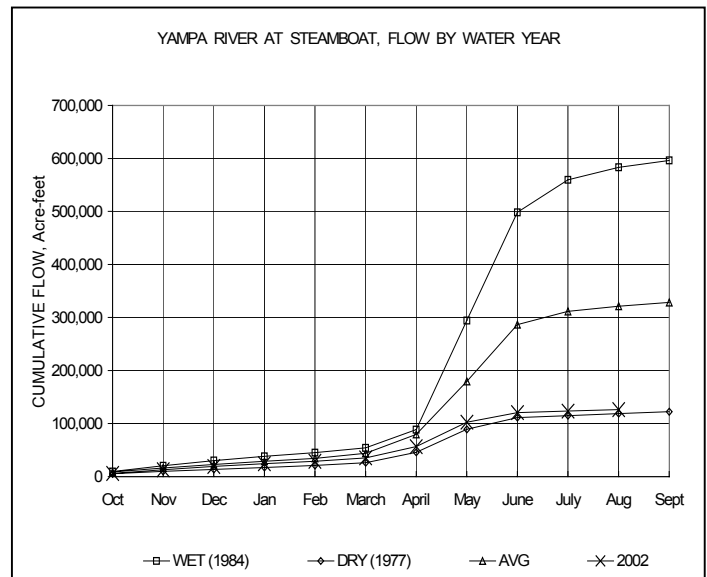
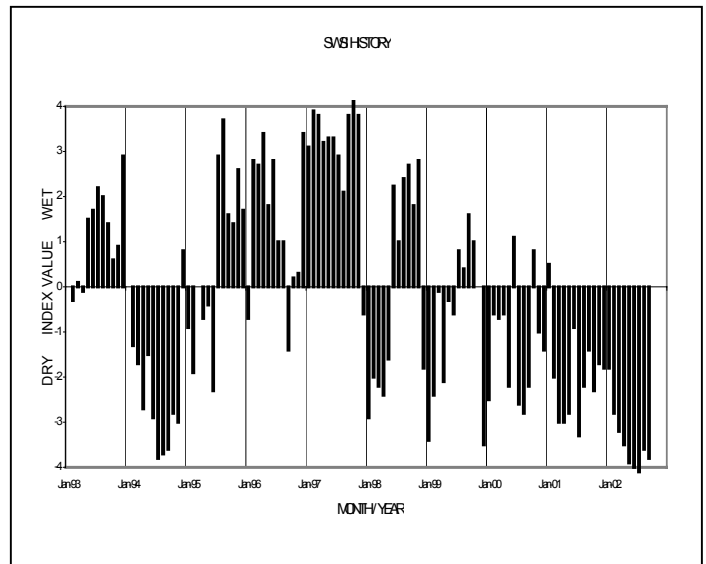
Flows continue to be extremely low with no major change to the precipitation patterns. Many irrigators continue to divert water for their meadows, while the availability of stock water is becoming a major concern. The willows and cottonwood trees are beginning to go into dormancy, which may help increase river flows.

Administrative/Management Concerns

The White River went on call August 26 for the first time since 1977. Reservoir releases continue to be made from Stagecoach Reservoir for the power generating station in Craig. Releases from Steamboat Lake for delivery to the power plant in Hayden began on August 30. The Division of Wildlife began releasing water from North Michigan Creek Reservoir on August 27 for the Town of Walden's domestic supply.

Public Use Impacts

The voluntary ban on fishing in Steamboat Springs was lifted in late August. While river flows are still low, water temperatures have gradually lowered to acceptable levels. Fishing and boating on Elkhead Reservoir and Steamboat Lake continue to draw large numbers of recreationists.





Basinwide Conditions Assessment

The SWSI value of -4.1 indicates that for August the basin water supplies were severely below normal. Flow at the gaging station Animas River near Durango was 132 cfs, as compared to the long-term average of 574 cfs. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 45% of normal as of the end of August.

August continued the drought trend of the entire year. Although many days had an afternoon build-up of thunderstorms, the moisture visible in the air rarely converted to real precipitation on the ground. Warm winds continued and high pressure diverted fronts away from the area. Precipitation for the water year (since October 1, 2001) in Durango has been 5.97 inches. It will take 2.81 inches of rain in September to avoid breaking the all time low record of 1977.

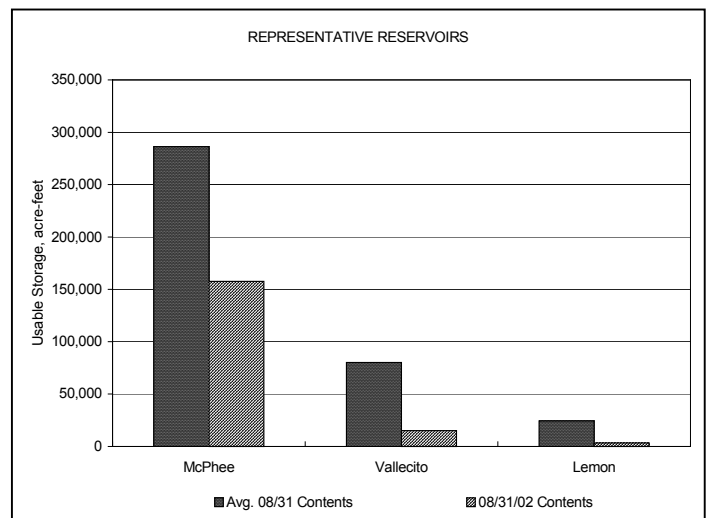
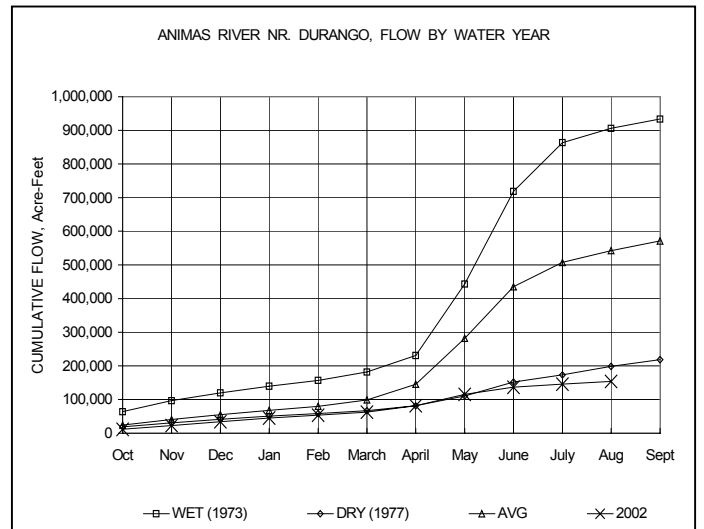
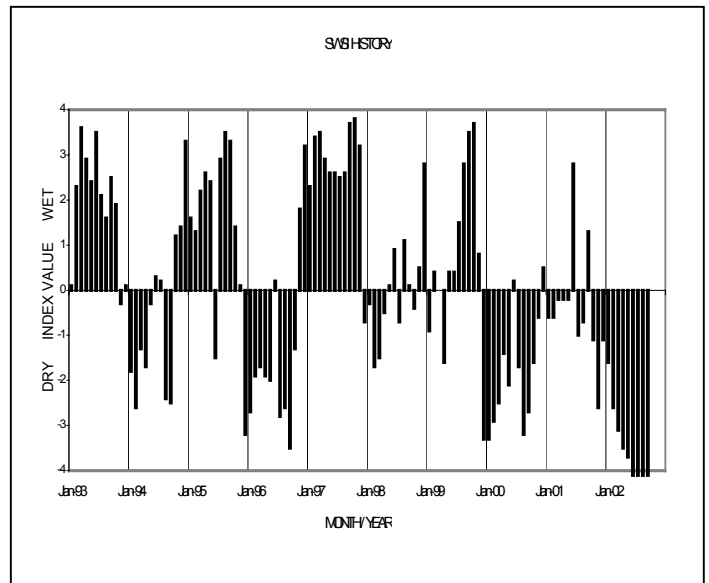
Temperatures remained warm, at about 3° above normal.

Rivers flowed at exceptionally low levels, around 20% of normal. Many rivers and streams have gone dry. The Florida River dropped to 3.5 cfs above Lemon Reservoir, the San Juan River at Pagosa Springs dropped to less than 7 cfs, and the Dolores River dropped to around 10 cfs of natural flow at Dolores.

Reservoirs reduced storage to base levels, being lower than any time in the past. The average live storage in the major reservoirs was 15%-20% of normal. A few runs of stock watering releases occurred, but it was extremely difficult to get the water delivered to the end of the ditch systems.

Outlook

A normal snowpack may leave the area in the same shortage by the end of next year. The soil moisture deficit is so great that major additions must be spread over time to recharge the ground water levels.



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