COLORADO
WATER SUPPLY CONDITIONS UPDATE

FROM THE OFFICE OF THE STATE ENGINEER: COLORADO DIVISION OF WATER RESOURCES
ROOM 818, 1313 SHERMAN ST., DENVER, CO 80203
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August 2002

The drought of 2002 continued through July with essentially the same SWSI index numbers that were reported for the previous month. The San Juan/Dolores Basin remained unchanged at the bottom of the index scale. Negligible increases were calculated in each of the other basins due to higher precipitation in July. Overall, the western half of Colorado appears to be experiencing the most severe drought conditions with index numbers between –3.5 and –4.1. The eastern half of Colorado has higher index numbers with the Arkansas Basin at –1.4 and the South Platte showing a –2.9.

Unless the region experiences significant weather pattern changes, 2002 is likely to become the drought of record for Colorado. The graphs in this report show that the Arkansas River, Rio Grande River, Colorado River, and Animas River have a cumulative flow for each river less than the comparison dry year of 1977. The South Platte River and Uncompahgre River have a cumulative flow very near the dry year flow, and the South Platte River had the lowest mean flow for the month of July since they began keeping records in 1902.

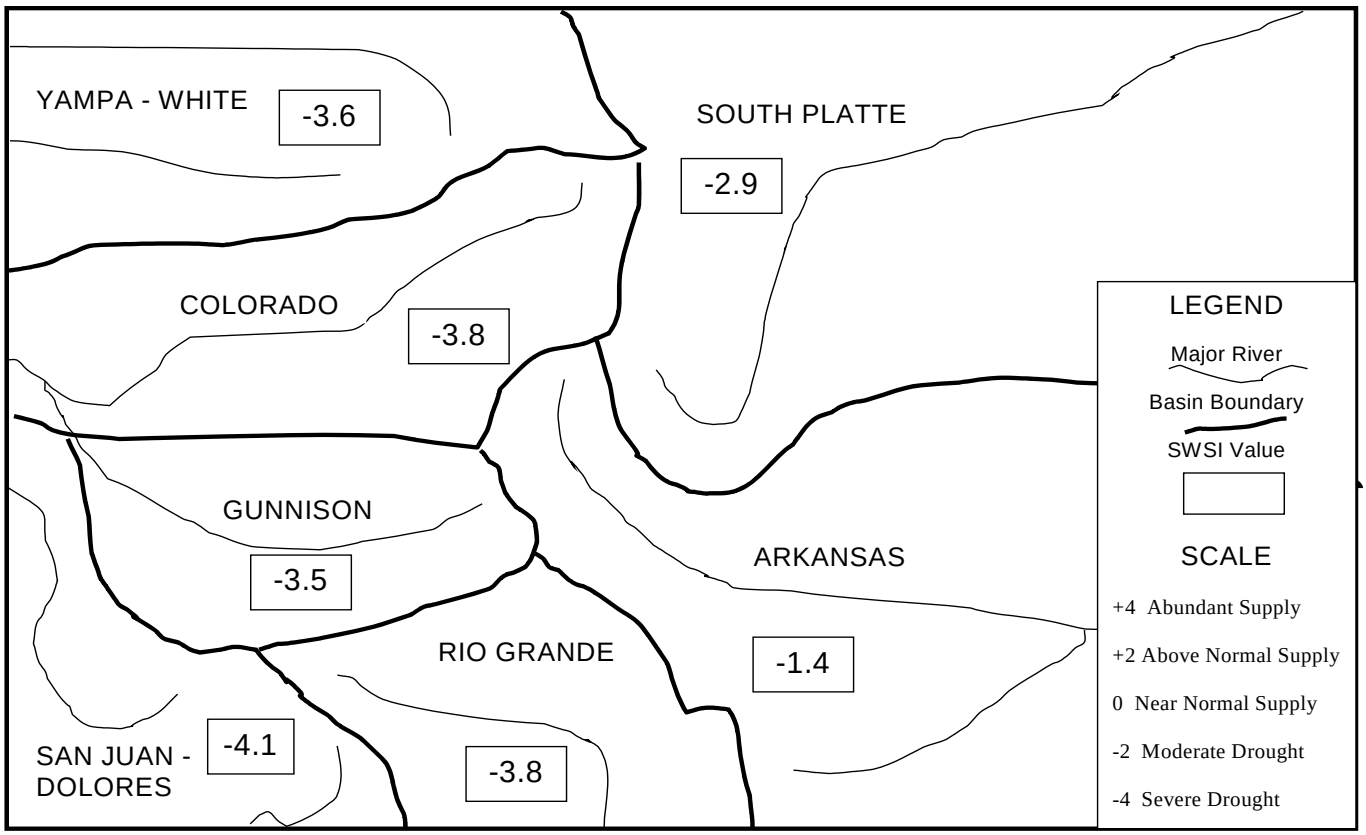
The Surface Water Supply Index (SWSI) developed by this office and the U.S.D.A. Natural Resources Conservation Service is used as an indicator of mountain-based water supply conditions in the major river basins of the state. It is based on stream flow, reservoir storage, and precipitation for the summer 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 August 1, 2002, and reflect the conditions during the month of July.

Basin	August 1, 2002 SWSI Value	Change From Previous Month	Change From Previous Year
South Platte	-2.9	+0.3	-4.5
Arkansas	-1.4	+0.3	-1.7
Rio Grande	-3.8	+0.1	-3.9
Gunnison	-3.5	+0.4	-2.3
Colorado	-3.8	+0.3	-1.1
Yampa/White	-3.6	+0.5	-1.4
San Juan/Dolores	-4.1	0.0	-3.4

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



August 1, 2002

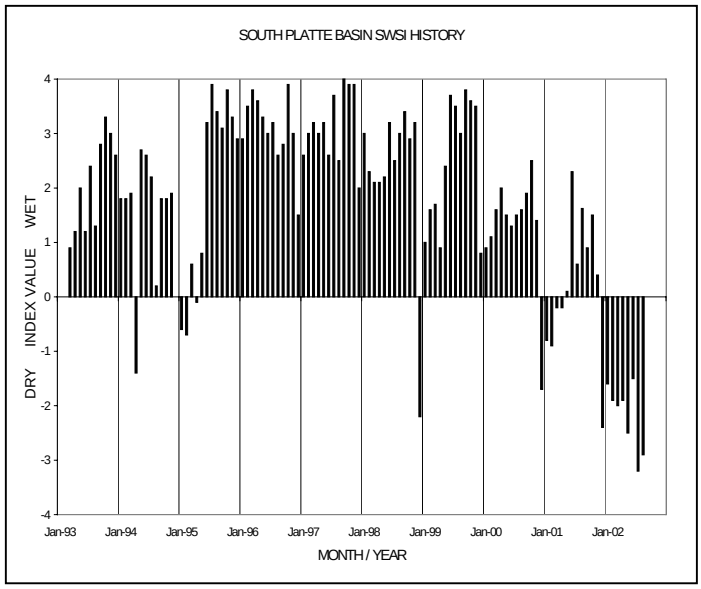
Basinwide Conditions Assessment

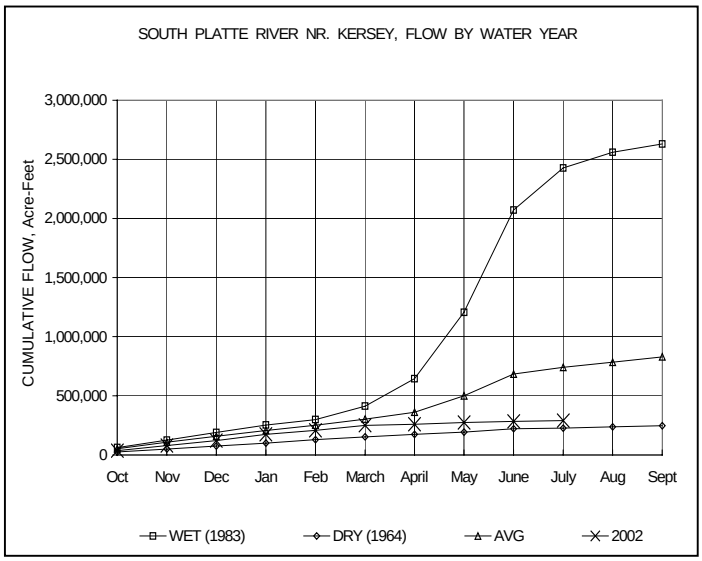
The SWSI value of –2.9 indicates that for July the basin water supplies were well below normal. Reservoir storage, the major component in this basin in computing the SWSI value, was 54% of normal as of the end of July. Cumulative storage in the major plains reservoirs: Julesberg, North Sterling, and Prewitt, is at 31% of capacity. Cumulative storage in the major upper-basin reservoirs: Cheesman, Eleven Mile, Spinney, and Antero is at 65% of capacity.

The drought conditions continued through July without any significant precipitation events. Mean flows during July in the South Platte at Kersey, a key gage indicating river conditions, were only 124 cfs. This is the lowest recorded mean flow for this station during July since they began keeping records in 1902. While very variable, the average daily flow at Kersey during July is 1040 cfs. Flow at the Colorado/Nebraska state line averaged 34 cfs.

The Farmers Independent 11-22-1865 call in Distict 2 on the South Platte above the confluence of the Saint Vrain is the most senior call in approximately 35 years on this portion of the river. The Weldon Valley 10-26-1881 call further east on the Platte is the most senior call in this portion of the river in over 20 years. Calls through the remainder of the South Platte and its tributaries are also very senior due to the very dry conditions through out the basin.

Two major eastern plains irrigation reservoirs, Jackson and Empire Reservoir, were nearly completely emptied during the month for use for irrigation. Other major eastern plains reservoirs including North Sterling, Riverside, and Julesburg Reservoir are near empty and will be during August barring major changes in weather patterns.

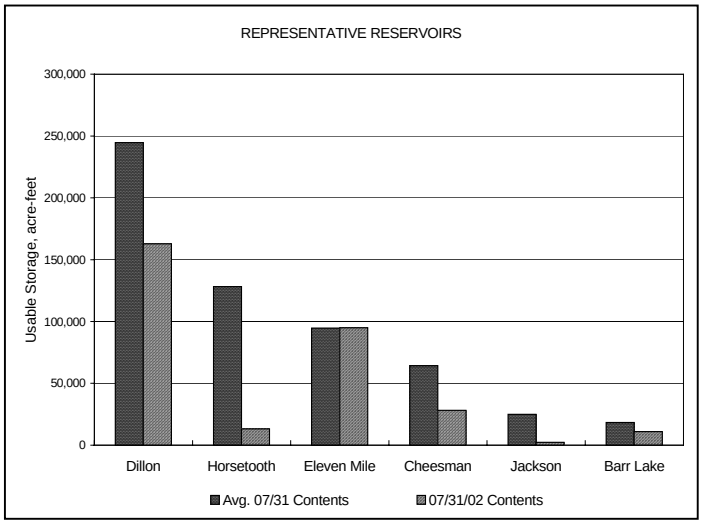




Outlook

Without reservoir water, additional users will not have adequate supply to irrigate all their crops and will have to make difficult decisions as to what crops that they will no longer irrigate. Also, replacement water may not be adequate to allow wells to pump through the remainder of the summer. Without wells, the impacts on agriculture in the South Platte would be devastating.

Cities continue to follow their water conservation plans hoping for a break in dry conditions. Many cities have been looking to purchase additional water supplies including transbasin supplies. The division office has approved four emergency substitute supply plans in the South Platte for cities to allow for adequate water for these cities.

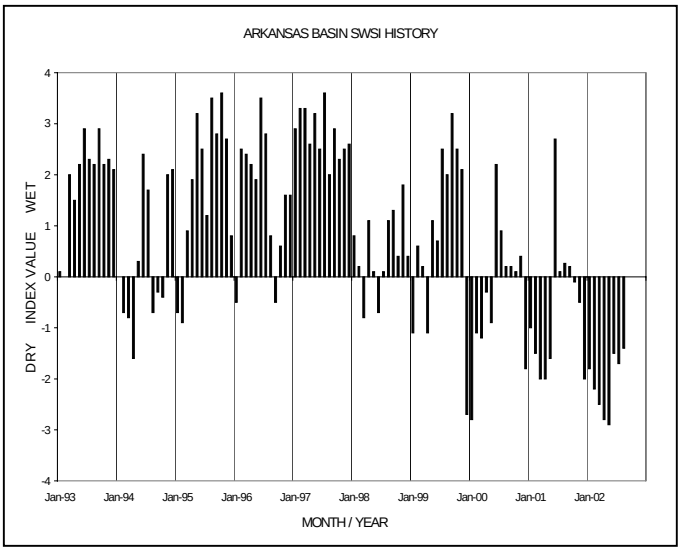


Administrative/Management Concerns

Denver has begun to drain Antero to consolidate supplies in Cheesman reservoir to reduce evaporation losses and to provide a mix of in-basin and transbasin supplies for water quality purposes. Rains that fall on the Hayman burn area can bring down ash and debris that will foul the water supply into Cheesman. By bringing water down from Antero and putting it in Cheesman, the Denver Water Department hopes to dilute the amount of ash in the raw water supply. We anticipate releases from Antero for approximately one month. After that Denver may lower Eleven Mile for the same reasons.

Basinwide Conditions Assessment

The SWSI value of –1.4 indicates that for July the basin water supplies were below normal. Flow at the gaging station Arkansas River near Portland was 202 cfs, as compared to the long-term average of 1,657 cfs. Storage in Turquoise, Twin Lakes, Pueblo, and John Martin reservoirs totaled 50% of normal as of the end of July.

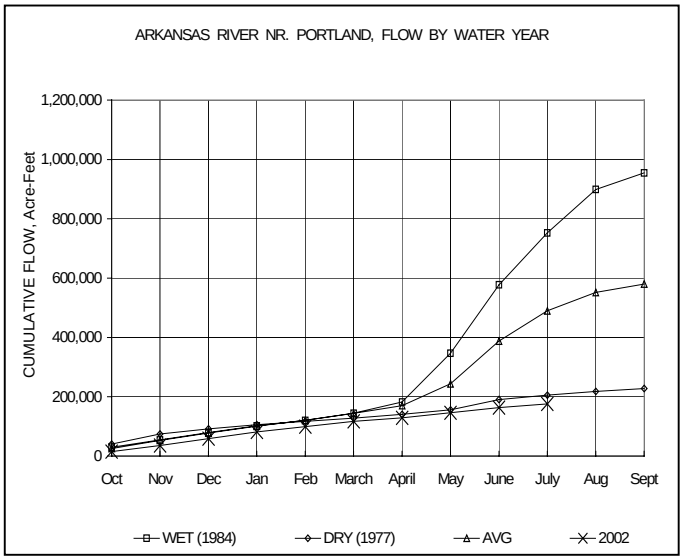


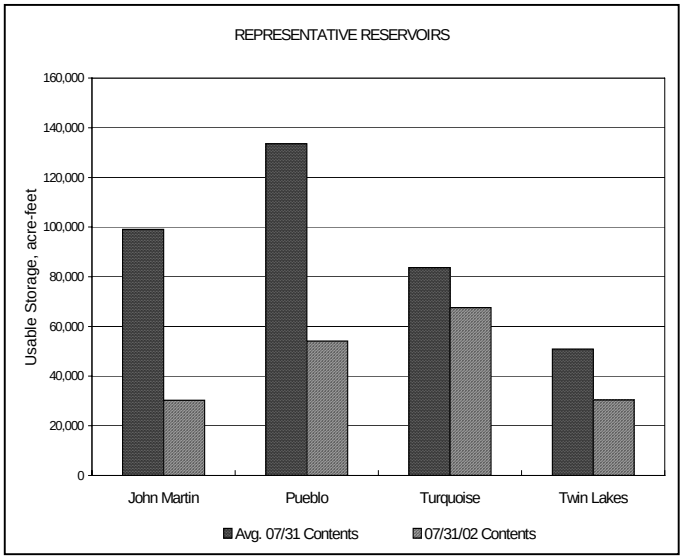
Outlook

Drought conditions remained severe throughout July in the Arkansas River Basin. The mainstem river call fell to the Rocky Ford Highline 1869 call for the first time in recent memory. This important turn of events caused a critical water right owned by the Pueblo Board of Water Works (supplier of water to Pueblo) to be called out and triggered a chain of events that caused Pueblo Board of Water Works to exercise an emergency clause in a number of lease agreements for transmountain water.

Administrative/Management Concerns

The impact of the lease agreements being withdrawn by Pueblo Board of Water Works most significantly affected the Arkansas Groundwater Users Association (AGUA), the third largest well owner association in the valley. The net loss of replacement water for stream depletions caused by AGUA well pumping was over 2,000 acre-feet, leaving the viability of the replacement plan in jeopardy for completion of the expected pumping from August 2002 through March 2003.





Basinwide Conditions Assessment

The SWSI value of –3.8 indicates that for July the basin water supplies were severely below normal. Flow at the gaging station Rio Grande near Del Norte was 142 cfs, as compared to the long-term average of 1,412 cfs. The Conejos River near Mogote had a mean flow of 37 cfs (8% of normal). Storage in Platoro, Rio Grande, and Santa Maria reservoirs totaled 68% of normal as of the end of July.

Precipitation in Alamosa was a 0.84 inches, 0.33 inches below normal. Alamosa temperatures ranged form 39° to 92°, with an average of 66.0°, 1.9° below normal.

Outlook

Below average precipitation and above normal winds and temperatures during July continued the trend of this irrigation season. There is no forecasted change in any of these drought producing conditions.

Administrative/Management Concerns

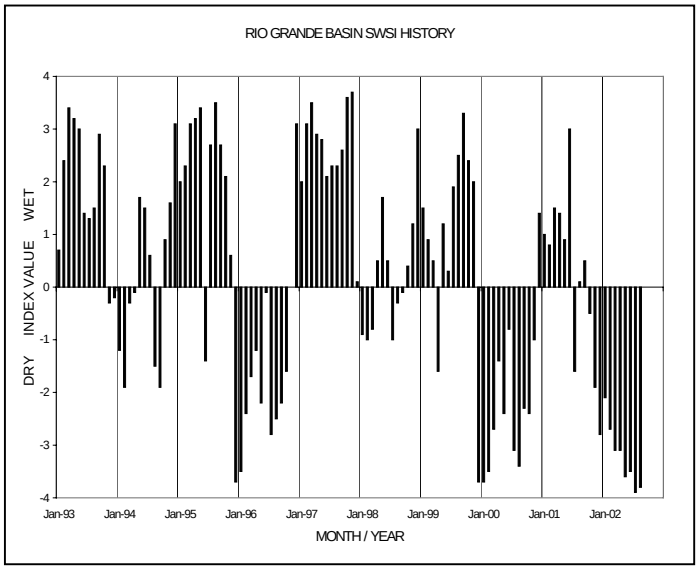
Reservoir storage is very low in the Rio Grande basin. Junior water right owners in Division 3 should expect the most senior water rights to keep them out of priority for the rest of the irrigation season.

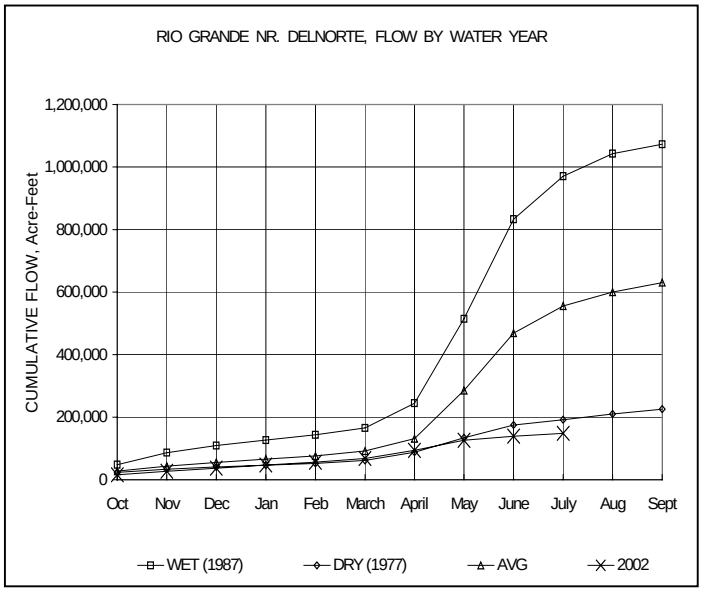
Deliveries of water to the State line required by the Rio Grande Compact have been more than adequate. No curtailment of water rights for Compact delivery purposes is needed or expected. Well production from the Closed Basin Project continued to deliver between 5 and 10 cfs of water to the Rio Grande.

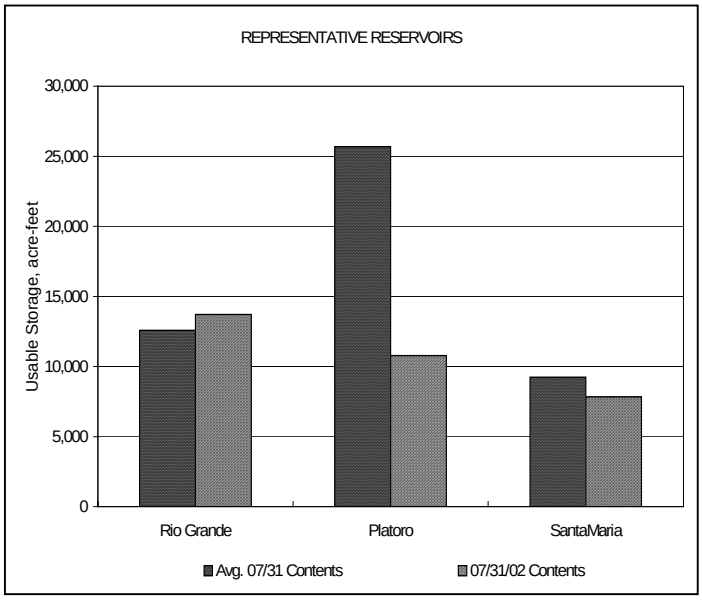
Irrigators using direct flow water rights have suffered greatly during this summer. Most ditches received no water and the ones fortunate enough to be in priority did not receive a full supply. Well users are now beginning to experience reductions in their well production due to severely declining water table conditions.

Public Use Impacts

This has been a very disappointing season for outdoor activities dependent on water. Water users and recreators should expect below average stream flow and reservoir levels through the end of the summer. The reduction of available irrigation water supplies will cause economic hardships for farmers and ranchers in the San Luis Valley.







Basinwide Conditions Assessment

The SWSI value of –3.5 indicates that for July the basin water supplies were severely below normal. Flow at the gaging station Uncompahgre River near Ridgway was 58 cfs, as compared to the long-term average of 334 cfs. Storage in Taylor Park, Crawford, and Fruitland reservoirs totaled 50% of normal as of the end of July.

Outlook

The water supply outlook continued to be bleak during July in the Gunnison and San Miguel Basins. The predominant weather pattern remained warm, windy and dry. July was the eighth consecutive month of below normal precipitation in Grand Junction. Montrose received 0.41 inches of rain for the month, which was 50 percent of normal.

Grand Junction recorded 14 days with temperatures greater than or equal to 100 degrees, eclipsing the previous record of 12 days recorded in 1901. They also tied their all-time high temperature of 105 degrees on both the 13th and 14th. Record highs were also experienced in the high country, with 86 degree temperatures recorded in Lake City on the 1st and Crested Butte on the 2nd.

The basin-wide precipitation was generally well below normal. However, rainfall patterns across the basin were quite variable. Near the dry end of the scale were Paonia and Glade Park, with 0.28 and 0.43 inches, respectively, while Ridgway and Ouray received 1.72 and 2.59 inches, respectively. Crested Butte picked up nearly seven-tenths of an inch on the 4th of July, and Telluride received 0.65 inches on the 19th.

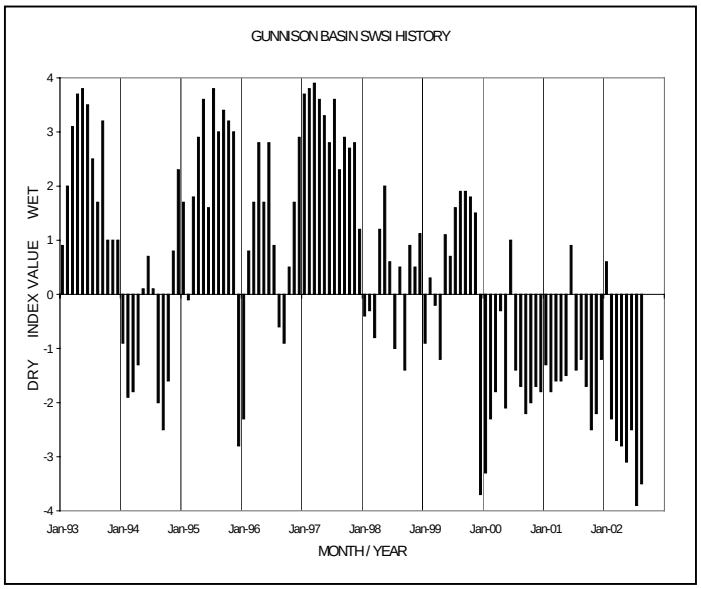
Administrative/Management Concerns

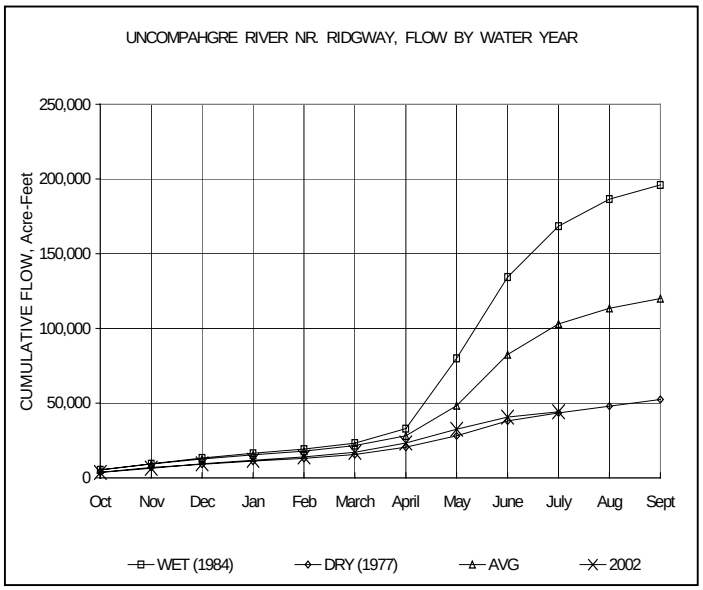
The Uncompahgre Valley Water Users Association continued to be short of water at the Gunnison Tunnel. Releases from the Second Fill account in Taylor Park Reservoir met the shortage, and allowed the Upper Gunnison users to divert until mid-July, at which time all water rights junior to the 1913 Tunnel decree were curtailed. This adversely affected much of the hay crop in the Upper Gunnison basin.

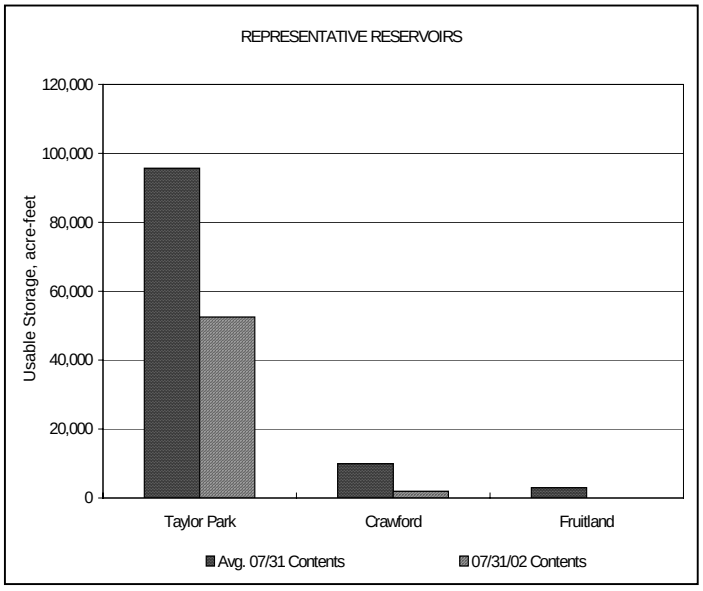
Public Use Impacts

The dry conditions resulted in numerous wildfires during the month of July. The biggest that occurred in the Gunnison/San Miguel basin was the Burn Canyon fire. It started with a lightning strike on July 9 and burned more than 31,000 acres before being contained on July 22.

Reservoir levels continued to drop at an alarming rate, resulting in significant impacts to recreation. Numerous reservoirs on the Grand Mesa were drained or nearly so. The National Park Service was forced to close several boat ramps at Blue Mesa Reservoir. The level of the state's largest reservoir was 59 feet below spill at month's end.







Basinwide Conditions Assessment

The SWSI value of –3.8 indicates that for July the basin water supplies were severely below normal. Flow at the gaging station Colorado River near Dotsero was 1,089 cfs, as compared to the long-term average of 3,086 cfs. Storage in Green Mountain, Ruedi, and Williams Fork reservoirs totaled 49% of normal as of the end of July.

Outlook

Monsoon rain patterns provided some relief during late July for some tributaries, but the rains are not expected to significantly reduce drought conditions. The mild El Nino weather pattern is expected to bring only moderate rains in the late summer. Flash flooding and mud flows remain a concern. Rifle experienced a severe flashflood in July.

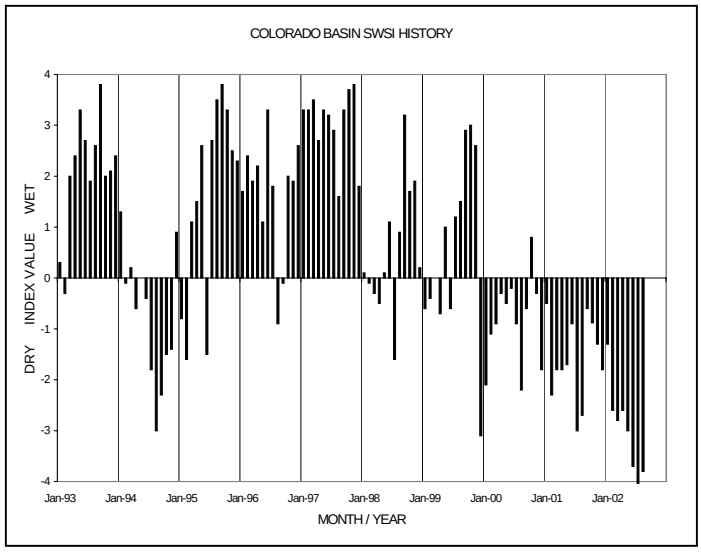
Administrative/Management Concerns

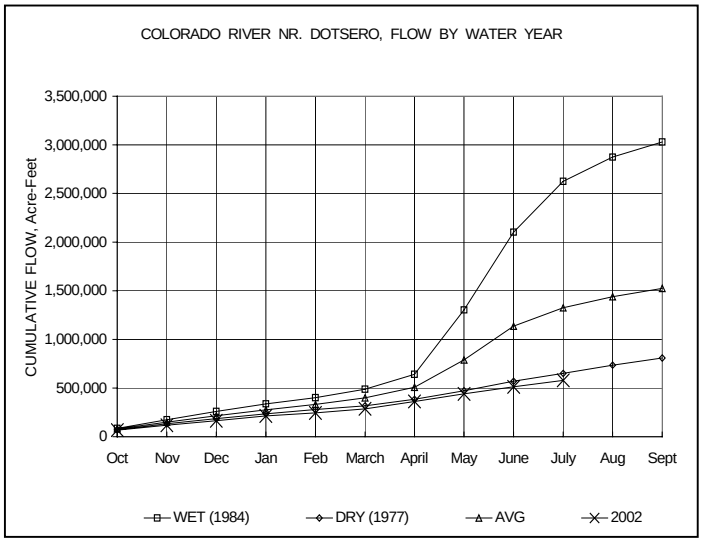
River calls at Shoshone Power Plant and at Cameo were on throughout all of July and are expected to remain on for the rest of the calendar year and irrigation year, respectively. Some augmentation plans are inoperable this year because replacement sources are unavailable (ponds didn't fill, or senior water rights were called out by more senior rights). Instream flow water rights have been impacted this summer, as well.

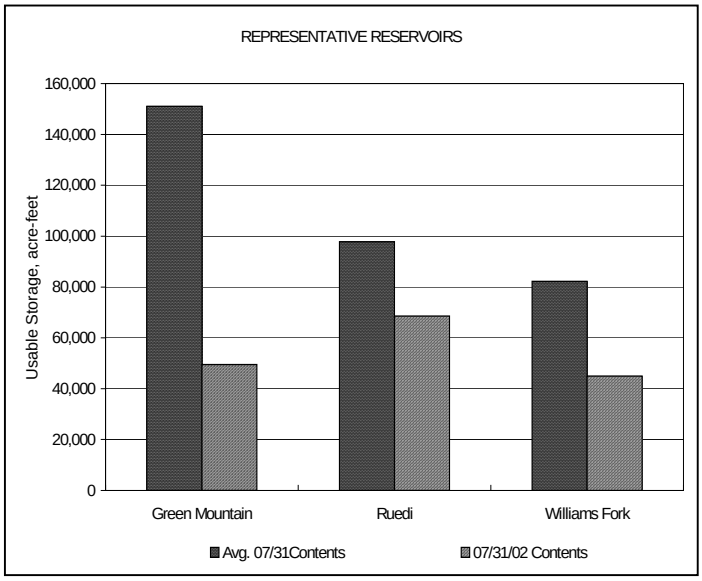
A landslide area at Green Mountain Reservoir has led the Bureau of Reclamation to increase the dead storage pool by 20,000 acre-feet. This significantly reduces the amount of replacement water for water users and is expected to increase curtailments this summer, particularly for water users within the basin.

Public Use Impacts

Most municipal water districts in the basin have outdoor watering restrictions in place, and many have ratcheted those rules up to higher restrictions as the summer has progressed. Rising water temperatures continue to adversely affect fisheries.



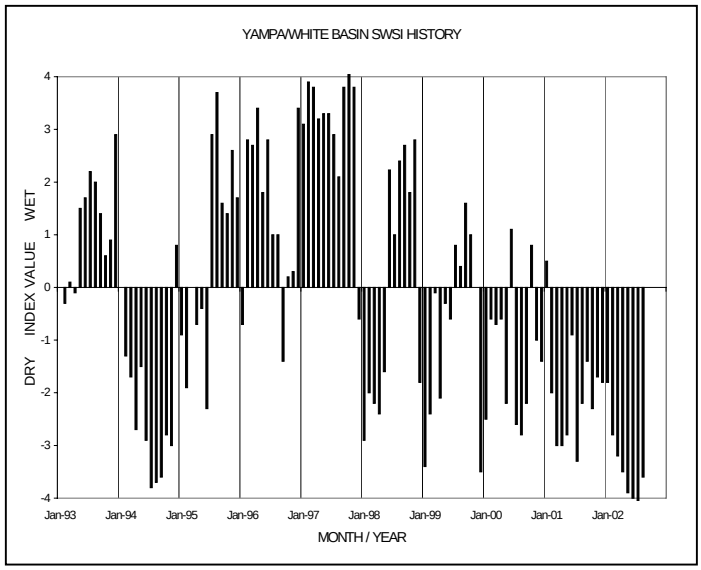




Basinwide Conditions Assessment

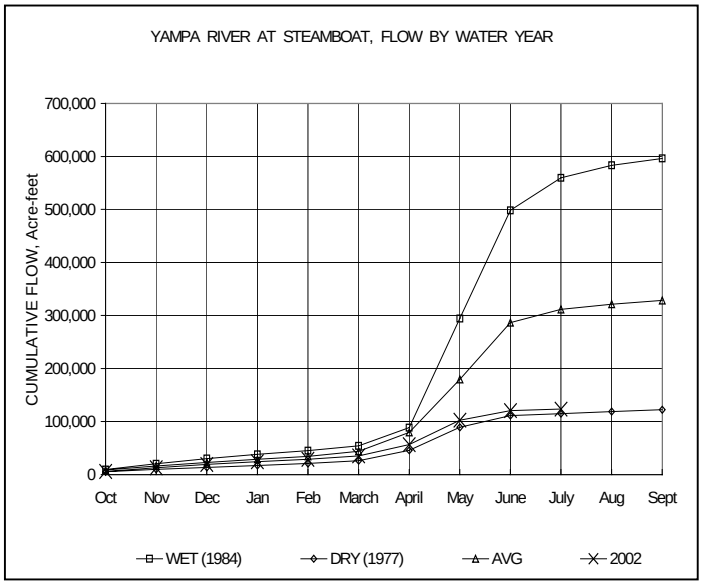
The SWSI value of –3.6 indicates that for July the basin water supplies were severely below normal. Flow at the gaging station Yampa River at Steamboat was 42.9 cfs, as compared to the long-term average of 404 cfs.

Precipitation for July was 76% of average for the basin as measured at the NRCS Snotel sites. Rainfall towards the end of the month brought the monthly average up considerably. 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 at the beginning of the month, recovering to low levels as the rainfall runoff and reservoir releases moved through the system. The Yampa River near Maybell saw flows of less then 4 cfs for several days early in July. Irrigation reservoirs are at minimum storage levels.



Outlook

The monsoon moisture arrived in the Division in the middle of July. Showers have been widely scattered but some have contributed significant rainfall. Continuation of these precipitation events should help to maintain adequate, but low, stream flows.



Administrative/Management Concerns

While stream flows have rebounded from the record lows seen earlier in the month, they remain at very low levels. Water users on the White River continue to voluntarily reduce diversions to keep a call off the river, which allows upstream junior water rights to continue to divert. Water has been released from Big Beaver Reservoir on the White River to help sustain the trout population above Meeker. This release by the Division of Wildlife was accomplished in cooperation with the water users of the major ditches below the reservoir who allowed the reservoir water to pass their headgates. On the Yampa River the Upper Yampa Water Conservancy District continues to release water from Stagecoach Reservoir to supplement the flow in the Yampa above the Elk River.

Public Use Impacts

The voluntary ban on water activities on the Yampa River in Steamboat Springs continues. The river flows are up, but the water temperatures are still high. A voluntary fishing ban from the Chuck Lewis State Wildlife Area, south of Steamboat Springs, to the confluence with the Elk River remains in effect. The stretch of the Yampa River from the outlet of Stagecoach Reservoir to the Chuck Lewis State Wildlife Area is now open to fishing.

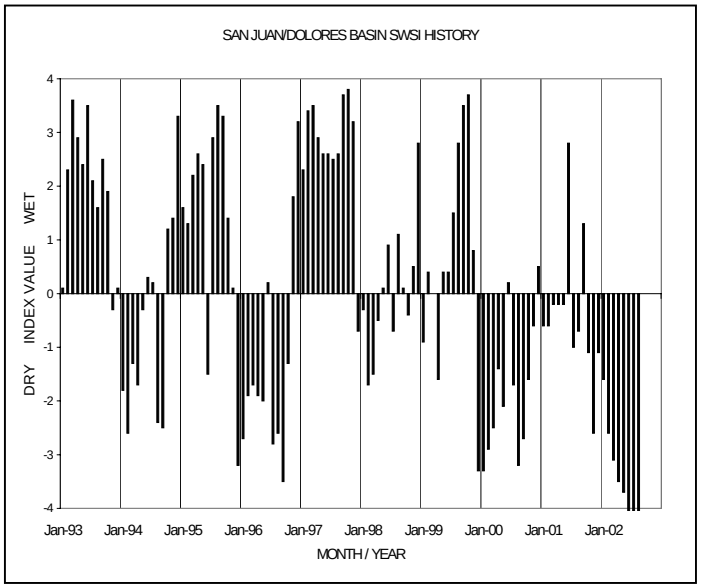
Basinwide Conditions Assessment

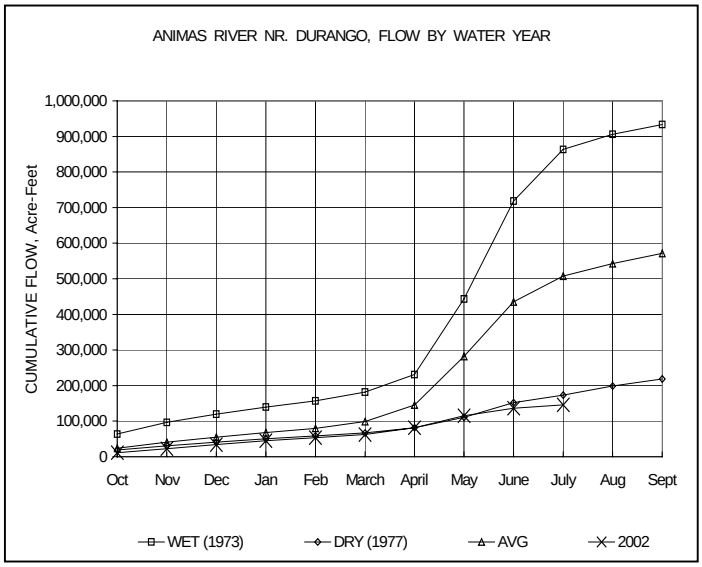
The SWSI value of –4.1 indicates that for July the basin water supplies were extremely below normal. Storage in McPhee, Vallecito, and Lemon reservoirs totaled 42% of normal as of the end of July.

Southwestern Colorado continued to be in the grips of an exceptional drought during the month of July. River flows in much of the region were at record setting low levels, and precipitation totals for Durango totaled 0.72 inches for the month (39.0% of average). This brought the total amount of precipitation for Durango to 5.16 inches for the water year, which is 34.0% of average.

River flows in most of the area were below the Historic Median as well as Minimum Daily Mean values. Many of the tributaries and creeks in the area were dry at some location for most of the month. The flow of the Animas River at Durango, the La Plata River near Hesperus, and Dolores River at Dolores averaged 153 cfs (13% of avg), 136 cfs (33% of avg), and 3.6 cfs (9% of avg) respectively. The historic averages for these sites are 1,219 cfs for the Animas, 415 cfs for the Dolores, and 38.8 cfs for the La Plata. The flows for the second half of the month at the Dolores gaging station were somewhat skewed by a major release of storage water from Groundhog Reservoir for storage in McPhee Reservoir.

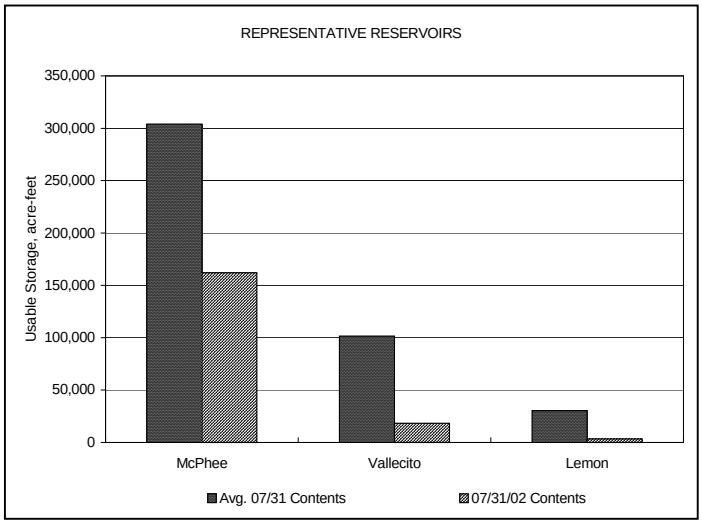
Reservoir storage ranged from 12% to 52% of average. End of month storage amounts were 3,360 af at Lemon Reservoir on the Florida River (12% of avg), 18,339 af at Vallecito Reservoir on the Pine River (21% of avg), and 162,118 af at McPhee Reservoir on the Dolores River (52% of avg). Jackson Reservoir on the Mancos River continues to deliver water for domestic and municipal uses only. Many of the smaller irrigation reservoirs in the area are empty.





Outlook

The outlook for the remainder of the year continues to be dismal even though there has been a slight change in the weather pattern and the area is experiencing sporadic isolated thunderstorms. Deliveries from storage for irrigation has ceased in most areas, with essentially no water available to meet late season irrigation demands. Significant precipitation events will be necessary to replenish the supplies for next year. Soil moisture remains at very low levels. Also, due to the Missionary Ridge fire, ash and sediment flows caused by rainfall events continue to be a major concern on the Florida and Animas Rivers. The Florida River is the primary source of municipal supplies for Durango, but they have relied heavily on the Animas supply due to ash and sediment load on the Florida.



Administrative/Management Concerns

Water administration has been necessary in many areas that have not seen calls in the recent past, or where there have no calls of record. These include McElmo Creek, Lightner Creek, Hermosa Creek, Ute Creek, Plumteau Creek, Weminuche Creek, and Stollsteimer Creek. There is also concern for domestic wells due to the lack of recharge from irrigation, and/or no available augmentation supply.

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